Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York.

All communications should be addressed to the New York Office, 30 Church Street

EDWARD A. SIMMONS, *President*
LUCIUS B. SHERMAN, *Vice-Pres.*
HENRY LEE, *Vice-Pres.*
SAMUEL O. DUNN, *Vice-Pres.*
CECIL R. MILLS, *Vice-Pres.*
FREDERICK H. THOMPSON, *Vice-Pres*
ROY V. WRIGHT, *Sec'y*
JOHN T. DEMOTT, *Treas.*

CHICAGO:
105 West Adams St.

WASHINGTON:
17th and H Streets, N. W.

CLEVELAND:
Terminal Tower

SAN FRANCISCO:
215 Market St.

Editorial Staff

SAMUEL O. DUNN, *Editor*
ROY V. WRIGHT, *Managing Editor*
ELMER T. HOWSON, *Western Editor*
H. F. LANE, *Washington Editor*

B. B. ADAMS
C. B. PECK
W. S. LACHER
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNE
J. H. DUNN
D. A. STEEL
R. C. AUGUR
R. A. DOSTER
JOHN C. EMERY
MARION B. RICHARDSON
L. R. GURLEY
H. C. WILCOX
R. S. KENDRICK
NEAL D. HOWARD
F. M. PATTERSON
RICHARD W. BECKMAN
LLOYD GEORGE
CHARLES LAYNG
GEORGE E. BOYD
WALTER J. TAFT
M. L. LEATH

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions $8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, $1.00; foreign countries, $2.00. Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 86 April 13, 1929 No. 15

In this Issue

Chicago & Alton Checks Corrosion in Locomotive Boilers ..... Page 828

A description of the new process adopted by this company which introduces electric current and arsenic into the boiler water

Great Northern Electric Locomotive Operation 839

D. J. Kerr, assistant to the vice-president in charge of operation, tells how this company met the problem of locomotive trouble caused by accumulations of moisture due to temperature variations in its Cascade tunnel

Reducing Transfers to the Vanishing Point 844

E. M. Wilcox, master car builder, Indiana Harbor Belt and Chicago Junction, describes the methods used by these Chicago terminal lines in securing results by organization to combat claims

EDITORIALS

Cleaner Freight Offices 823
"Ballyhoo" for Railroads 823
Training Railway Officers 823
Further Improvement in Passenger Service 823
Rail Production an Index of Maintenance Trends 824
Service and Railway Buying 824
What Makes Some Prices High 825
Traffic and Car Repairs 825
The Proposed Six-Hour Day 826
Employee Education 827

GENERAL ARTICLES

Chicago & Alton Checks Corrosion in Locomotive Boilers 828
Rail Output Less in 1928 832
Container and L. C. L. Operating Costs Compared 833
Wisconsin Separated Grades at 23 Points in 1928, by H. D. Blake 837
Freight Car Loading 838
Great Northern Electric Locomotive Operation, by D. J. Kerr 839
C. & O. May Issue Stock at Par 841
British Report on Collision at Dinwoodie 843
Reducing Transfers to the Vanishing Point, by E. M. Wilcox 844
Southern Pacific 1928 Gross a Record 846
To Build New Stations at Omaha 849

COMMUNICATIONS AND BOOKS 851

LOOKING BACKWARD 852

ODDS AND ENDS OF RAILROADING 853

NEWS OF THE WEEK 854

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

Busy Men often prefer to "See" you by Telephone

Your customers are busy people. There are times when they prefer that you visit them by telephone. You save their time as well as your own.

A sales executive does 77% of his out of town business by telephone. He says, "you get the undivided attention of the man you are calling. Without any preliminary conversation, you are right down to basic facts. Think also of conserving the time of the buyer."

Many such practical experiences have grown out of the Key Town Plan. As your business in the larger towns grows and takes more and more of your salesmen's time, why neglect the smaller towns? Keep up your contacts; cover them by telephone from the larger towns. The Bell System has prepared a national and regional Key Town Map, which may be procured free upon request to your local Bell business office.

Study these key town maps to learn the most effective method of reaching your market by telephone—the modern way to meet competition. Cover more towns. Make more contacts. Use classified telephone directories to uncover new outlets. Develop each territory with savings in cost.

The quickest way to make the calls from each key town is by Sequence Lists.

The Bell System Credit Plan makes it unnecessary to carry cash for the calls. It helps keep a record of all contacts.

Ask the local business office today for complete information. Bell Telephone Service . . . . *Quick* . . . . *Inexpensive* . . . . *Universal.*

Railway Age

Vol. 86, No. 15 April 13, 1929

Table of Contents Appears on Page 5 of Advertising Section

Cleaner Freight Offices

IT is no longer considered inevitable that the freight office itself must be dirty and unattractive because of the unprepossessing locality in which the freight station must usually be located. More attractive offices have distinct advantages in promoting better morale, but it should not be forgotten that there are material advantages as well. Not only is it possible to recruit a better class of employees when good surroundings are provided, but it is a fact often demonstrated that the same clerk will produce better work in an attractive office than in an unattractive one. Better clerks and more careful work mean fewer exceptions, the majority of which are caused by clerical errors. This is only one of the material benefits that have caused many railway officers to feel that money expended along these lines brings adequate returns.

"Ballyhoo" for Railroads

MANY railroad men in the past few years have given thought to the problem of highway competition and methods of meeting it. But the competition is still with us. Ideas which have already been experimented with must be given further trials and the railroads will have to continue on the alert for still further plans which seem to have some chance of success. The problem may not, however, be as complex as it at times seems. The solution may very well lie in pursuing some one, or several, rather simple plans with real vigor, rather than in working out some complicated scheme. An interesting expression of opinion on this subject appears as a letter to the editor on another page of this issue. The writer, Lyle L. Iversen of Seattle, believes that the public has ceased to be "railroad-minded" and is now "bus-minded" because operators of the latter vehicles have adopted "ballyhoo" as a tool of their trade. This writer would have the railroads adopt "ballyhoo"—advertise by every kind of medium; improve service and let people know about it even if a brass band had to be used to attract attention; make varying rates for varying classes of accommodations on trains—in other words carry on a merchandising campaign as if the commodity to be sold were soap, or cigarettes, or hosiery rather than transportation. Mr. Iversen believes that such measures would attract passengers, including short-haul passengers, back to the trains. We do not agree with this view entirely. There are some situations where the motor coach is the more efficient transportation medium—short-hauls where traffic density is not great enough to permit frequent train service, for instance. Nothing is to be gained by trying to bring back to trains traffic which the motor coach is better fitted to handle. On the other hand, there are many situations where the highway vehicle is now competing for business where it is distinctly less efficient than the train—slower, less comfortable, less safe—inferior service for people who will submit to inconvenience and discomfort to save a few dollars. Mr. Iversen's discussion is lively and thoroughgoing and railroad men will, we believe, find his views provocative of serious thought.

Training Railway Officers

ANNOUNCEMENT was made in the latest annual report of the Indian State Railways that the Railway Board, during the past year, had sanctioned plans for the construction of a staff college to train railway officers. The announcement states that, "the college is intended primarily for the training of probationary and junior officers already employed on railways but classes for more senior officers will be held in time. For the present it will meet the needs of the state-managed railways and will deal with transportation and commercial work and with certain allied subjects connected with these aspects of railway operation." The board already has schools for the training of the subordinate staff and thus the new college will extend this educational system. Analogous to the foregoing are the training courses recently established by the South African Railways for technical school graduates entering their employ. In view of these developments it would seem that the need for training railway officers in courses designed to combine theoretical instruction with practical experience is becoming more generally recognized. Here in the United States similar plans have met with success, two recent instances being the summer sessions for railway officers inaugurated last year by the Harvard Graduate School of Business Administration and in the co-operative courses conducted by the Massachusetts Institute of Technology in conjunction with the Boston & Maine.

Further Improvement in Passenger Service

THE New York Central and the Pennsylvania have announced additional fast passenger train service between the principal cities served by them, and the former company has further stated that several of its new trains will appear in bright colors. This information provides further evidence of the tenacity of the railroads in fighting to retain this class of traffic and the constantly improved service to the public which is the result. When will these efforts start to bring the re-

sults which they merit? No one can tell. On the other hand, they have undoubtedly decelerated the tendency of traffic to seek other methods of transportation. The rate of decline has been alarmingly great, but probably not as great as it would have been had no effort been made to stem the tide. As a matter of fact, the two roads just mentioned as having announced improvements in their service have been remarkably successful, comparatively speaking, in their hold on passenger business. The greater the activity of the railways in experimenting with ways and means to meet the passenger traffic problem, the sooner will it be solved. Persons interested in the welfare of the railroads must, therefore, look with approval on the rapid extension of railroad operation of motor coach lines, and on all other intensive efforts to attract business or reduce operating costs, as steps which will speed the finding of a remedy for this most serious malady.

Rail Production an Index of Maintenance Trends

THE statistics of rail production for 1928, which are presented on a following page, afford a striking indication of the changes that are taking place in maintenance of way practices. As these figures indicate, the total tonnage of rails rolled in the United States in 1928 was smaller than in either of the two preceding years. Yet the production of rails of 120-lb. section and heavier was larger than in any previous year, and the output of rails weighing 100 lb. per yd. and more, while less in tonnage than in either of the two preceding years, was greater in proportion to the total than ever before. These latter figures show the very definite trend toward the use of heavier rails throughout the country. Confined at first to lines of heavy traffic along the Atlantic seaboard, the use of 110 to 130-lb. sections has now spread throughout the country, with the result that the standard rail sections to which the various railways are working have been increased at least 15 to 20 lb. per yd. during the last few years.

This is due, of course, to the belated recognition of the fact that the loads have risen to the point where a stronger track construction is essential to the movement of traffic with reasonable safety and economy. It is due even more to a growing appreciation of the fact that a greater expenditure for a strong track construction is justified by the reduction in maintenance expenses that can be effected by reason of decreased labor requirements for a given standard of maintenance, by proportionately greater service life obtained from the rail itself, etc. The installation of heavier rail as the capstone of a heavier track construction is reflected even more directly in improved train operation with its resulting economies.

In view of the marked trend toward the use of heavier rail, the decline in the total tonnage of rails rolled reflects an even greater reduction in the mileage of tracks relaid with new rails. This reflects another trend in maintenance practices. It is common knowledge that, excepting on sharp curves, rails require renewal primarily by reason of wear or "battering" at the ends. Of late years the practice of overcoming this battering by welding new metal on the rails in track has grown rapidly until it is now standard practice on many roads. By this means it is not unusual for the life of rail in busy tracks to be increased 25 to 50 or even 75 per cent. Expressed in years, several roads estimate that welding has increased the life of rail in their main lines three or more years.

Service and Railway Buying

INCIDENTS affecting the relations between railroads and manufacturers are constantly occurring which raise a question as to whether the "service" of the manufacturer to the railway is not often overdone. The situation warrants study because of its bearing on railway costs. It is significant that dissatisfaction exists among those who receive this service as well as among those who furnish it. Recently a technical officer of a large railway declared such service to be a waste, and criticized manufacturers that pay the salaries and traveling expenses of service engineers upon the ground that they play only a small part in effecting sales. About the same time the head of a large railway supply firm criticized the railroads for making excessive demands on the service departments of manufacturers.

Should it be said that, as a general proposition, this service should not be offered by manufacturers or sought by railroads? The justification, indeed the necessity, for a reasonable amount of bona-fide service has been established. It seems not so well proved, however, that all of the service offered is bona-fide, or that all roads temper their calls for bona-fide service with reasonableness. Usually when irregularities are brought to light in the relations between railroads and manufacturers, it is the manufacturers who are blamed, and it is true, moreover, that manufacturers who sell supplies to railroads are not free from fault for some of the service conditions which arise. The railway officer quoted is extreme in his views, but is is doubtless true that in marketing of merchandise by some concerns, "service" is hardly more than a slogan, and service engineers are sometimes engineers in name only.

On the other hand, railway officers undoubtedly are responsible for some of the abuses in connection with the rendering of service by manufacturers. The supply of anything is regulated by the demand for it, and manufacturers, like fishermen, are apt to use the bait which experience proves will be attractive. The manufacturer who is organized to provide a real service is frequently burdened by the amount of service which some railroads expect. There is frequent demand upon factories to send men long distances to investigate ill-advised complaints or to correct minor troubles. Equipment and machinery cannot always be installed without the assistance of its builders, and the better manufacturers are not only organized but anxious to provide such service. It would probably astonish some railroad officers, however, to learn how much time manufacturers' representatives spend warming their heels in railway ante-rooms or traveling long distances merely to gratify the whims of railway officers or to correct situations which call for only ordinary skill and common sense on the part of the road's own employees. Frequently the railway is satisfied, moreover, to get this attention from none but vice-presidents, chief engineers or other representatives of high rank, and it is small wonder that the number of such titles is increased to supply the demand.

The burden on the manufacturer lies in the fact that he is expected to provide this service free and must frequently do so to avoid reprisals. The manufacturer

suffers because such service costs money, but what is a tax upon the seller is also eventually a tax upon the buyer. Much is heard nowadays about the high cost of selling. This is primarily the manufacturer's problem, but it must be recognized that high costs of selling have their counterpart in high costs of buying. The railroad may think that it is getting such service free, but the wise and responsible buyer, knowing that the cost is there and must be paid, will find ways to tell real service when he sees it and to refrain from unreasonable demands for it.

What Makes Some Prices High

THE question of how much engineering service it is good business to give in advance of a sale was discussed at a recent meeting of machinery manufacturers. The following actual experience was cited as a striking example of what the abuse of this practice is costing the machine tool industry: An inquiry for equipment, the total price of which approximated $7,500, included so many requests for information and proposed layouts, that it cost one of the bidders nearly $500 to submit his quotation. Complete time studies and considerable drafting-room work were required, and after the prospective customer was furnished with all the desired information, a competitor received the order.

Five or six other manufacturers were asked to quote on the same equipment, and presumably each had to incur approximately the same expense, so that probably about $3,000 was spent for engineering service by all the bidders in their efforts to obtain a $7,500 order. Considering the whole proposition, this sale was made at a loss to the industry; yet the buyer expressed his opinion that the price of the equipment was rather high.

The method used by many railroads in purchasing machine tools makes it imperative for the builders to give costly engineering service in order to compete for the business. The total of these costs amounts to a high figure since some railroads request bids from many manufacturers of a particular type of a machine instead of limiting the bids to the two or three builders whose machines it is known will meet the requirements.

Most manufacturers, through the application of modern management and production methods, have reduced to rock bottom the manufacturing costs of their product. It is generally recognized in many industries that distribution costs equal and in some cases probably exceed the manufacturing costs. Efforts to eliminate economic waste in the future will have to deal more with the problems of distribution than with the problems of production.

The practice of asking for bids from every manufacturer of each type of tool purchased is, no doubt, technically defensible as competitive bidding. The railroad which follows this practice may feel that it has driven a hard bargain to its advantage, but does not always realize that the sales costs entailed by the unsuccessful bidders must be passed along to other purchasers who, if they follow the same practice, complete an endless chain which maintains high prices. There are men on all railroads who are competent to prepare a selected list of the manufacturers of tools which meet all the requirements of the using department of the railroad, and to this list should be confined the requests for bids. Indeed, this is the practice of many railroads. To ask for bids from manufacturers whose products are practically eliminated from serious consideration at the outset is not essential to competitive bidding. It is sheer economic waste for which the users of the product must pay.

Traffic and Car Repairs

THE use by shippers of their power to route and divert traffic to intimidate the railways into disregarding sound economic and legal principles in dealing with them is taking many forms. Since the *Railway Age* has been discussing the use of traffic to influence purchases, it has been advised from several sources that certain tank car companies are using their control of oil traffic to get improper concessions regarding the repair of cars. The bulk of oil shipped by rail is handled in tank cars owned by approximately 300 companies, many of which have no repair facilities of their own and all of which depend more or less upon the railways for the maintenance of their equipment. The rates to be charged for different kinds of repairs are definitely prescribed under the interchange rules of the American Railway Association. There can be little question that the failure of any railway to collect, and of any tank car company to pay these rates, would make both the railway and the car owner punishable under the Interstate Commerce Act for criminal rebating, the penalties for which include not only fines but imprisonment for those who may be held responsible.

It would be obviously unreasonable to assume that railway officers are disposed to engage in such practices, but under the threat of diversion of a large amount of traffic there is a strong temptation to minimize repair bills by permitting tank cars to proceed over the roads in less than the desired condition as regards standards of maintenance. In other words, an urgent inducement is offered each road to do as little work as possible on tank cars, and, when a car is received that can run, but possibly ought to be sent to the rip track or shop for repairs, "Nurse it along" and let the next road do the work. The indications are that, in some instances, roads have gone so far as to operate tank cars at reduced speed in order to accomplish this objective. Inevitably, therefore, certain roads with higher standards of maintenance bear the brunt of tank car maintenance work, and it is against them that the oil traffic club is being used at the present time, particularly by some of the smaller tank car companies.

It may well be questioned if a condition of undermaintenance of tank car equipment is in the best interests of the owning companies themselves, and certainly it proves costly to the railroads. During a period of one year, a large Midwestern railroad had 31 wrecks due to the failure of tank car parts, involving a total damage to equipment, track, etc., of almost $70,000. Of these failures, defective arch bars were responsible for 10 wrecks; box bolts, 7; truck sides, 2; side bearings, 2; couplers, 4; brake rigging, 3; air hose, 1; journals, 1; and miscellaneous, 1. If a loss of the magnitude of $70,000 a year is sustained by a single road notable for its insistence on high standards of maintenance of equipment including tank cars, still greater losses must be occurring on roads on which the traffic club is used with more effect, and which lower their maintenance standards and fail to make repairs to tank cars in questionable condition.

The Proposed Six-Hour Day

THE heads of the railway train service brotherhoods recently have announced that their members will seek the establishment of a six-hour basic working day. This recalls the announcement made by them about fifteen years ago, when the basic day in train service was ten hours, that they intended to seek the establishment of a basic day of eight hours. There followed a controversy between railway managements and the train service brotherhoods which culminated in August, 1916, in the issuance of an order for a nationwide strike, and in the speedy passage by Congress of the Adamson act establishing the eight-hour day in train service by law.

The railways resisted the demand for the establishment of an eight-hour basic day upon the ground that freight divisions were generally so arranged that trains moving at about ten miles an hour required ten hours or more to get over a division; that the railways would have to be largely reconstructed to make it possible to get trains over the road in eight hours; and that, therefore, the employees, in seeking an eight-hour basic day at ten hours pay, were really seeking, not a reduction of working hours, but a large increase in wages. The eight-hour day for employees in general was opposed upon the ground that it would make necessary a large increase in the number of employees and cause a large increase in operating expenses.

Not only was the eight-hour basic day established in train service, but soon afterward, under government operation, eight hours was made a day's work for practically all employees, and has been ever since. Nevertheless, although the traffic handled last year was much larger than in 1916, the number of persons employed was only slightly larger than in 1916, and the total number of hours of work paid for was 17 per cent less than in 1916. The average speed of freight trains has been increased from about 10 miles to almost 13 miles an hour, which means that the average train is now moved even farther in eight hours than it was in ten hours in 1916. Do these facts show that the arguments made by railway managers in 1916 against the eight-hour day were fallacious and invalid? Can they be used now to show that a six-hour day could be established without important and expensive changes in railway physical properties, a large increase in the number of employees, and a consequent large increase in operating expenses if employees were to be paid the same wages for six hours as they are now paid for eight hours?

Developments Under Eight-Hour Day

The developments that have occurred since the eight-hour day was established throw some light on these questions. The eight-hour basic day in train service was in effect during part of 1917, but the first year in which the eight-hour day for practically all employees was in full effect, and a record traffic was handled, was 1920. The average number of hours worked per employee in 1917 was 3,138, and in 1920 only 2,693. There was, however, very little difference in the total number of hours worked by employees in the two years, the figure for 1917 being 5,438,000,000, and for 1920, 5,447,000,000. The average number of employees in 1917, however, was only 1,733,000, while in 1920 it was 2,023,000, an increase of 290,000. The figures given show that the increase in the total number of employees was in almost direct proportion to the reduction in the average number of hours that they worked. During the depression in 1921 and 1922 the number of employees was reduced, but when a record-breaking traffic was again handled in 1923 the number of employees averaged 1,857,674, or about 115,000 more than in 1917, although the total hours that employees worked was actually less than in 1917. This indicates that the difference between the number of employees in 1917 and 1923 was entirely due to the reduction in working hours. The record shows conclusively that for some years the establishment of the eight-hour day did largely increase the number of persons that had to be employed by the railways.

In every year from 1918 to 1927, inclusive, excepting the depressed years 1921 and 1922, the number of employees was greater than in 1917. Finally in 1928, although it was not a year of depression, the number of employees was reduced to less than in 1917, this being accomplished, of course, by reducing the total hours worked by all employees.

Was this reduction in total hours of labor paid for due to increased efficiency in the service rendered by the average employee? The efficiency of employees unquestionably has increased since government control, but this was not the main thing that made it possible for the railways to operate in 1928 with almost 367,000 less employees than in 1920. The investment of new capital in railway properties was the main thing that made it possible. The average investment per employee in 1920 was about $9,500; in 1923 it was about $11,000, and in 1928 it was about $14,700, or almost 55 per cent more than in 1920. The net increase in the investment in the railways since 1920 has been about $5,000,000,000. It is the investment in larger locomotives and freight cars, in reductions of grades, block signaling, labor saving machinery in shops, etc., which more than all other things combined has contributed toward making it possible to reduce the number of employees.

What Would Occur Under Six-Hour Day?

The train service employees may think that because of the increases in the length and speed of trains they have been most affected. The fact is, however, that in the five years ending with 1928 the reduction in the number of train and engine employees was only 9½ per cent, while the reduction in all employees was 10.6 per cent. Excepting for the investment that has been made to save labor the number of employees required would have been permanently increased almost in proportion to the reduction in average hours worked, per employee as it actually was between 1917 and 1920. The railways undoubtedly would have made large labor saving improvements even if the eight-hour day had not been adopted, and it must, therefore, be assumed that they are now employing many more persons than they would have been if the eight-hour day had not been adopted.

In view of what has actually occurred since the eight-hour day was adopted it is not difficult to foretell what would occur if the six-hour day were adopted. The immediate effect would be a very large increase in the number of employees and in the total wages that would have to be paid. On the basis of experience under the eight-hour day it is reasonable to assume that the establishment of a six-hour day would promptly cause an increase of 25 to 30 per cent in the number of employees, and in the total payroll. An increase of 25 per cent in the total payroll would amount to $725,000,000 annually, and, unless the railways were to be bankrupted, the public would have to pay this in increased rates until railway managements could raise enough capital and make enough labor-saving improvements to again reduce the number of employees, as it has been reduced since the eight-hour day was established. Experience under the eight-hour day indicates it would take at least fif-

teen years to accomplish under the six-hour day such a reduction in employees as has been effected under the eight-hour day, and meantime the public would have to pay in increased rates the increased payroll which the employment of additional men would make necessary.

As a matter of fact, the public pays in perpetuity for every reduction in hours of work that is not needed to relieve the workers from excessive fatigue. In the railroad industry, for example, normal progress tends constantly to reduce the number of hours of human labor required to handle a given amount of traffic, and a reduction in working hours results in the employment of more persons than would otherwise be necessary, even though it does not actually result in a permanent increase in the number of employees.

Apparently the principal argument advanced for the six-hour day is that improvements in railway plants and operating methods have reduced the number of persons employed and are tending to reduce it more, and that hours of work should be reduced to prevent unemployment. It is true that in the railroad industry as in some other industries progress has reduced the number of employees required; but this does not necessarily result in unemployment because, where industry is constantly expanding as in the United States the persons displaced in some industries usually are soon absorbed by other and often new industries.

An Economic and Social Question

The issue raised by the proposed six-hour day is entirely different from the issue raised by earlier demands for abolition of the twelve-hour day, or even for the substitution of the eight-hour day for the ten-hour day. In most industries twelve hours work, and in many ten hours work, was exhausting and deleterious to the health of the workers. Furthermore, a long working day left the workers insufficient time for recreation and self-improvement. There are few kinds of work which cannot be done for eight hours without excessive fatigue, and the eight-hour day leaves the worker ample time for rest, recreation and self-improvement. The demand for a six-hour day raises issues which are purely economic and social. This is as true of the demand in the railroad industry as in any other industry, for railway employees cannot advance any claim for a six-hour day that cannot be advanced in behalf of the workers in other industries. The principal question raised is whether people in general prefer six hours work and the necessities, comforts and luxuries that can be produced in a six-hour day, or eight hours work and the greater amount of necessities, comforts and luxuries that can be produced in eight hours. The railways are simply a part of the machinery of production, and therefore the establishment of the six-hour day on them alone would reduce the total amount of goods of all kinds that could be produced by causing to be employed by the railways persons who otherwise would be engaged in productive work in other industries.

The six-hour day should not be established in the railroad industry excepting as a part of a general program of establishing it in all industries. To establish it in the railroad industry alone, and to pay railway employees eight hours wages for six hours work, would be to discriminate unfairly in favor of them as against all classes of persons who continued to work longer hours. In announcing their movement for a six-hour day the railway labor leaders have given the public for consideration a question of great interest and importance. That the railroads and other industries could in time adjust themselves to a six-hour day as they have to an eight-hour day is undoubtedly true, but if the workers of the country get additional leisure by the establishment of the six-hour day they and all other classes of the people will pay for it in the form of a lower material standard of living than they would have if the workers continued to work eight hours a day.

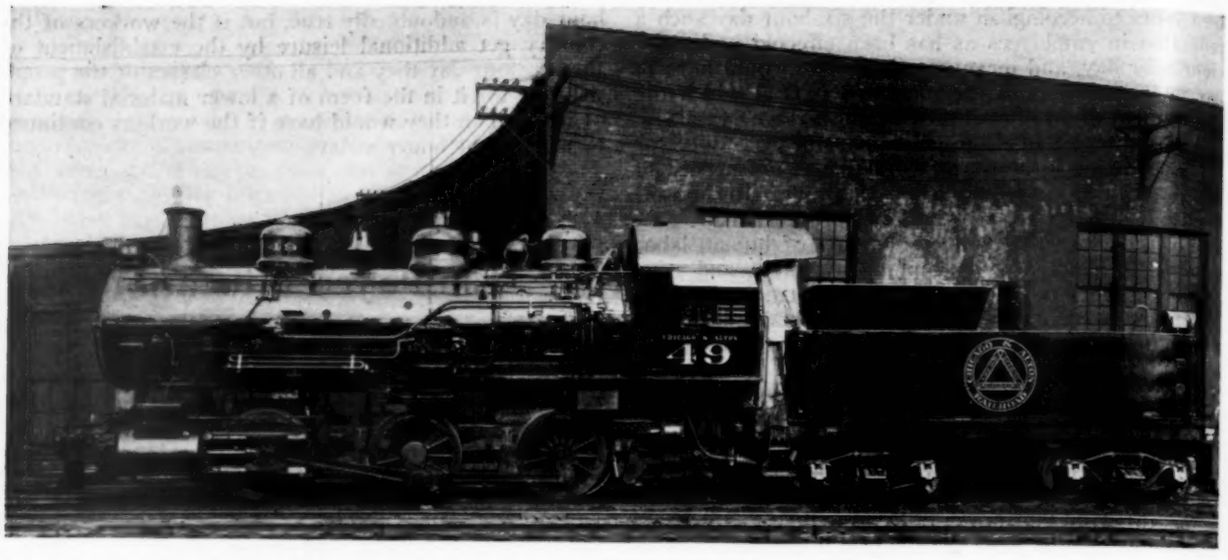
Employee Education

IN reviewing the accomplishments of the railway clubs during the past year one cannot but be impressed by the results of the competition for the best paper prepared by the younger men of the Canadian Railway Club. These competitions have been held annually for several years and are intended to stimulate the younger men to become identified with the club and take part in its activities. This particular club has always indicated a strong sense of its responsibility as an educational agency. The subject considered in the competition this year was that of employee education and there were 124 contributions to the contest. The winner, H. G. Heisler, is associated with the sleeping, dining and parlor car department of the Canadian Pacific. His paper was read at the December meeting of the club and that occasion was enlivened by the presence of Sir Henry Thornton, who showed a keen interest in the outcome of the competition.

One of the points upon which Mr. Heisler placed particular emphasis was the fact that while workers entering the technical and mechanical trades are given apprentice and vocational training, no provision is made for educating and training those who enter the clerical and other departments. Incidentally, the need for such training has been commented upon time and time again by those who have attended the national, regional or system younger railroad men's conferences, which have been held in this country and Canada in recent years.

Sir Henry Thornton in discussing Mr. Heisler's paper, made this significant statement: "I wish that there were more institutions on all continents corresponding to the Institute of Transport in England. That is an institution, as many of you know, no doubt, which provides educational opportunities for young men seeking careers in the railway world. It promotes the educational growth of the profession and measurably is the custodian of its efforts. It is doing a splendid work, perhaps a more notable work in the railway world than almost any association of which I am aware."

American railroad executives take great pride in the improvements which are being made in railway operation and the remarkable records which have been achieved in recent years. They have made an excellent record in inspiring the officers and employees to improve their performances by intensive and highly specialized compaigns, such as those in the interest of safety first, fuel conservation, prevention of loss and damage to freight, and in other efforts to promote efficiency and economy. It is only too true, however, that except for some railroads, which have modern apprenticeship systems for the shop employees and improved methods for training enginemen and trainmen, they have trailed far behind the British railways, which have done so much in making it possible for the employees in all departments to secure a thorough training to fit them for larger responsibilities and more important positions in the organization.



The First C. & A. Locomotive To Be Provided with Gunderson Process Equipment for Preventing Corrosion

Chicago & Alton Checks Corrosion in Locomotive Boilers

New process introduces electric current and arsenic into the boiler water—Road equipping all power on strength of four years' tests

SINCE September, 1924, the Chicago & Alton has equipped the boilers of 75 locomotives with an electro-chemical method of preventing boiler corrosion, known as the Gunderson Process. This method, first developed on the Alton, consists of introducing a compound of arsenic into a boiler, equipped with electrodes which permit passing electric current through the water to the interior metal surfaces of the boiler and thus create a condition inhibitive to pitting and grooving. The arsenic compound is put into the boiler in one-pound tubes through one of the washout holes. The electric current is obtained from the headlight generator or from a storage battery connected with it.

Alton Water Treated to Reduce Hardness

The satisfactory results of over four years' tests, most of them conducted under the direction of C. M. House, superintendent of motive power and equipment, have caused the Alton to make this equipment standard for application to all locomotives as they receive general repairs. These results are summarized by officers of the road, as follows; Practical elimination of corrosion in the boilers equipped; general increase in tube and flue life from 12 months or less to the four-year limit set by the I.C.C. requirements; firebox life proportionately increased, with substantial reduction in boiler maintenance costs and locomotive out-of-service time; and the practical elimination of engine failures due to pitted tubes and flues, with the attendant irritating and costly service delays.

Most of the raw waters available for locomotive use on the Chicago & Alton carry a high content of mineral salts, as shown in one of the tables, the total hardness in the worst case, namely, that of the Bloomington city water, being 54.3 grains per gal. By 1924, automatic soda-ash plants had been generally installed to prevent the formation of hard scale on boiler tubes and firebox sheets. The specific treatment given the Bloomington city water was to supply 4½ lb. of soda ash per 1,000 gal., with the object of completely neutralizing the sulphate hardness and leaving a surplus of sodium carbonate. Of two other waters available for locomotive use at Bloomington, the Illinois Power & Light water was treated with two lb. of soda ash per 1,000 gal. and the water from the Big Four well with 1¾ lb. per 1,000 gal.

By this method of treating boiler feedwater, the difficulties due to scale formation were largely solved, but boiler pitting grew worse. Yard locomotives at Bloomington, Ill., for example, sometimes required almost two full sets of tubes and flues for each machinery shopping, boiler sheets and staybolts deteriorating likewise. A total of 7,800 tubes were scrapped in back shops because of pitting and grooving during a period of a little more than a year, and in addition, during the same period, there were 556 instances of tube failures. Expensive delays chargeable to these failures made it imperative to check corrosion, and, in 1924, it was decided to equip test locomotives with the newly-developed process.

Operating Results and Savings

Installations of the Gunderson Process to Chicago & Alton locomotives were made as follows: 2 in 1924; 2 in 1926; 17 in 1927; 40 in 1928; and 14 in 1929 (up to

March 15). It is impossible to give a definite statement of savings from the prevention of pitting and corrosion in the 75 boilers involved, because of the large number of indeterminate factors, such as the savings in boiler material, labor, locomotive out-of-service time, locomotive failures, train delays, etc. Some idea of what has been accomplished, however, may be obtained by analyzing the results in one or two specific cases.

Locomotive 49, for example, the first to be equipped, in September, 1924, is a six-wheel switcher, used in the same yard service at Bloomington, Ill., as Locomotive 44, non-equipped. A Pacific-type locomotive, No. 656, and a ten-wheel locomotive, No. 251, used in fast passenger service on the Northern and the Western divisions, respectively, were equipped with electrodes in October, 1924, and March, 1926, respectively, Locomotives 658 and 254, non-equipped, being operated in similar service.

Analysis of Raw Water Supplies (Expressed in Grains Per Gal.*) at Principal Water Stations on the C. & A.

Location	Source	Total hardness	Carbonate hardness	Sulphate hardness	Alkali salts	Dissolved solids
Kansas City	City Water	17.0	10.5	6.5	6.4	23.4
Blue Springs	Pond	10.2	7.6	2.6	10.3	20.4
Odessa	Pond	9.8	5.3	4.5	4.4	14.1
Blackburn	Pond	9.6	4.7	4.9	5.5	15.1
Slater	Pond	9.2	2.9	6.3	16.2	25.3
Glasgow	Mo. River	12.2	8.2	4.0	13.4	25.6
Higbee	Pond	6.7	2.9	3.8	7.7	14.4
Larrabee	Pond	2.8	0.6	2.1	3.4	6.2
Mexico	Pond	8.2	3.5	4.5	8.4	16.8
Booth	Pond	6.9	4.1	2.8	10.0	16.9
Louisiana	Miss. River	12.0	8.4	3.6	2.0	14.0
Pearl	Ill. River	15.6	10.5	5.2	14.8	20.4
Roodhouse	Spring	19.4	16.3	3.0	1.4	20.8
Brighton Park	Chicago Water	9.0	7.0	3.0	0.1	9.1
Glenn	Canal	11.5	7.6	4.0	22.8	34.4
Braidwood	Well	21.0	18.1	2.9	15.7	37.4
Mazonia	River	19.2	12.8	6.3	7.6	26.8
Pontiac	River	22.3	15.2	6.2	11.4	32.7
Bloomington	City Water	52.2	23.6	28.6	16.8	69.0
	**I. P. L. Well	42.5	28.9	13.6	6.0	48.5
	Big Four Well	37.8	28.9	8.9	9.0	46.8
Ridgely	River	10.5	7.0	3.5	9.5	19.6
Springfield	City Water	7.2	2.3	4.9	5.8	12.9
Virden	Pond	17.1	10.5	6.7	3.0	20.1
Rinaker	Pond	4.2	2.3	1.8	3.3	7.4
Godfrey	Pond	11.7	8.2	3.5	6.8	18.2
Venice	City Water	10.3	7.0	3.3	5.5	15.7

*Multiply by 1.72 to convert to parts per 100,000.
** Illinois Power & Light.

A comparison of the service records of these locomotives will give a measure of the effectiveness of the electrode applications, since to as large an extent as possible other variables have been eliminated. There has been no change, for example, in the kind of boiler-tube material used on the Alton in recent years. While these locomotives have not all taken water from the same source, all have used water which promotes corrosive action to a greater or less extent. There has been no change in the method of blowing off or washing boilers since the installation of the process. The inbound and outbound method of blow-off is utilized on passenger power accompanied by restricted blow-off on the road. The inbound and outbound blow-off is also used with switching power, accompanied by occasional blow-offs in the yard.

Corrosion Eliminated in Locomotive 49

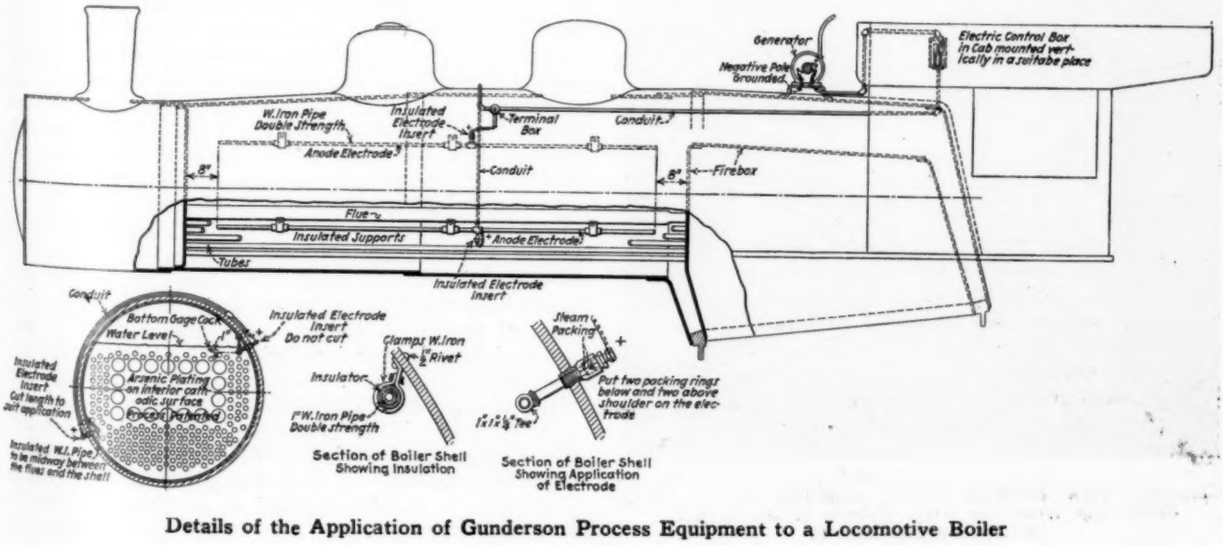
Detailed boiler-shopping records of Locomotives 49 and 44 are shown in two of the tables. Within a period of three years and two months before the installation of electrodes Locomotive 49 had been through the back shop on two different occasions for retubing and general overhauling necessitated by pitting and grooving. Previous to the shopping in September, 1924, approximately 100 tubes had been removed in the enginehouse due to failure through pits, and, while in the shop, 213 more pitted tubes were scrapped with an estimated loss in tube material alone of $595. The electrodes were installed in the boiler at this shopping period. The boiler was then shopped in July, 1926, principally for an inspection to determine the completeness with which corrosion had been prevented. The

Locomotive 49 Boiler-Shopping Record
(Electrode-equipped)

Classification, 0-6-0
Number of tubes and flues
283 tubes, 2 in. by 12 ft. 8 in.
Class of service
Switching service in Bloomington yards
Condition prior to 1924 shopping
Pitted tube failures common, sometimes occurring daily
Approximately 100 failures since previous shopping in June, 1923
Newly applied firebox sheets and staybolts
Boiler shopped, September 24, 1924
283 second-hand steel tubes applied
213 old tubes scrapped on account of pitting
210 new staybolts applied

GUNDERSON PROCESS ELECTRODES INSTALLED

Date of first tube failure—None
Boiler shopped, July 21, 1926
Tubes removed, found free of pits, safe-ended and reapplied to another boiler; 283 new 2-in. tubes applied
New right side sheet, 7 rows high, applied
Considerable other boiler work, done at this shopping, was not due to corrosion
Locomotive stored empty for 3 months, but small rust spots developed on the tubes; did not have characteristics of pits
Date of first tube failure—None
Boiler shopped, February 20, 1929—50,925 miles
Lagging taken off to permit removal of flexible staybolt caps
Not necessary to remove tubes
Interior inspection showed good condition with no signs of pitting
Date of first tube failure—None
Will get at least 4 years' service with these tubes and extension may be requested



Details of the Application of Gunderson Process Equipment to a Locomotive Boiler

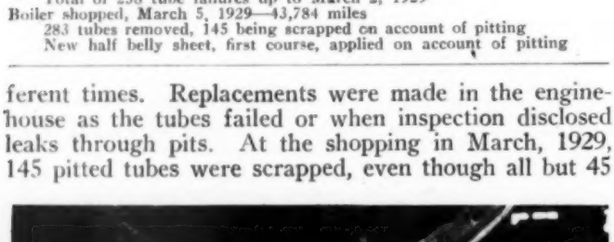
steel tubes were removed, found free from pits, and reapplied to another boiler, and 283 new steel tubes were applied to the boiler of Locomotive 49. Other parts of the boiler were also found to be free from corrosion. At the next shopping in February, 1929, after making 50,925 miles, an interior inspection showed the boiler to be free from corrosion as far as inspection could disclose. Consequently, the tubes were not removed but were left to run the full four years allowed under I. C. C. regulations.

The record for Locomotive 44 shows that when it was shopped in December, 1926, practically all of the full set of 283 tubes was scrapped on account of pitting. The front tube sheet was pitted and grooved, requiring renewal, as well as the bottom half of the second course. After nine months' service, or in September, 1927, a pitted tube was replaced and from that time until March 2, 1929, or in 18 months, a total of 238 pitted tubes were replaced in this boiler at 60 different times. Replacements were made in the enginehouse as the tubes failed or when inspection disclosed leaks through pits. At the shopping in March, 1929, 145 pitted tubes were scrapped, even though all but 45 of the full set of tubes had been replaced since December, 1926. It will be noted that during this period of two years and three months while making 43,784 miles, 383 pitted tubes were scrapped, representing a loss in material (at 15 cents per ft.) of $727, to which must be added a minimum enginehouse labor cost of at least $5 for each of the 60 failures, bringing the total loss due to pitted flues to $1,027. It was also necessary to renew the front tube sheet and belly sheet of the second course on account of pitting.

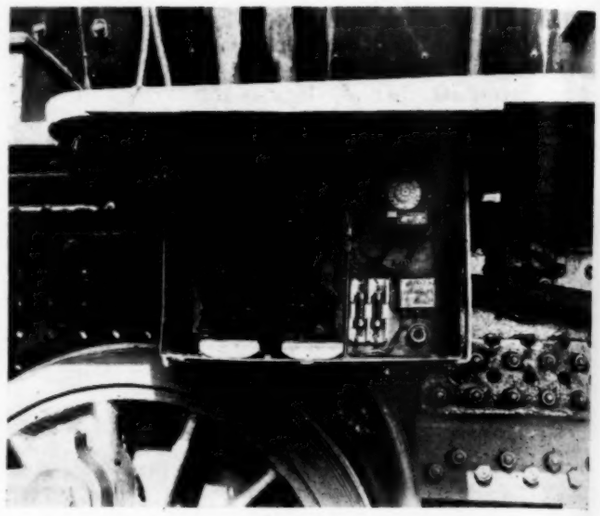
Locomotive 44 Boiler-Shopping Record

(Without Electrode Equipment)

Classification, 0-6-0
Number of tubes and flues
283 tubes, 2 in. by 12 ft. 8 in.
Class of service
Switching service in Bloomington yards
Condition of boiler
Safe-ended tubes in good condition
No electrode equipment
Boiler shopped, Dec. 6, 1926
283 tubes removed, safe-ended and reapplied on account of pitting
Front tube sheet renewed on account of pitting;
Bottom half of second course renewed for some reason
Date of first tube failure
September 9, 1927
Total of 238 tube failures up to March 2, 1929
Boiler shopped, March 5, 1929—43,784 miles
283 tubes removed, 145 being scrapped on account of pitting
New half belly sheet, first course, applied on account of pitting



Close-Up View Showing Pitted Condition of the Belly Sheet Cut from the First Course of the Boiler of Locomotive No. 44



A Sheet Metal Box Under the Running Board Houses Special Equipment, Including the Storage Battery when Used to Obviate Running the Headlight Generator During Daylight Hours

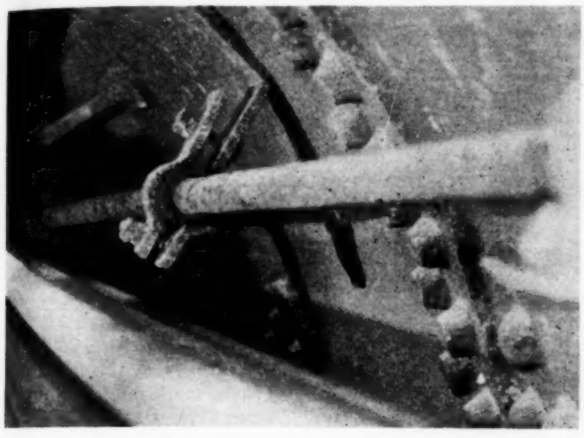
The effectiveness of this method of preventing corrosion has been strikingly demonstrated at the Bloomington enginehouse for the reason that switching Locomotives 44, 64, 65 and 412, not equipped, continue to give trouble, due to the failure of pitted tubes, thus requiring extra work in the enginehouse and frequently delaying switching service in the yards. Locomotive 49 has never had a flue failure since coming from the shop in 1924, and the flues are in good condition at the present time.

Grooving of Tubes at Front Flue Sheet Stopped

Locomotive 656, in fast passenger service between Chicago and Bloomington, had several tube failures previous to the 1924 shopping due principally to grooving at the front sheet. In October, 1924, it was necessary to scrap 175 pitted steel tubes and 19 superheater flues, approximating a total loss of $898 in material. A pitted and grooved front flue sheet was renewed, and grooves in the belly were patched. The Gunderson Process, with only one electrode above the flues, was applied to the locomotive at this shopping, whereas Locomotive 49 had received two electrodes.

In July, 1926, after having made 112,000 miles, the locomotive was again shopped for general overhauling, at which time only the tubes below the superheater flues were removed for inspection. This inspection disclosed the fact that the use of arsenic at about six months intervals was insufficient, and that the experimental voltage of 17 volts was excessive, inasmuch as a few bottom tubes farthest from the anode were found to be slightly pitted. However, all of the tubes removed were safe-ended and reapplied to another boiler. The balance of the boiler was free from pitting or grooving. It was decided to continue the use of the single electrode, but to add arsenic semi-monthly

and use between 2 and 3 volts, as tests on Locomotive 49 indicated this to be more effective. At the next shopping in November, 1928, after making 150,000 miles, all of the tubes and flues were renewed, safe-ended and reapplied, and the balance of the boiler was found free from corrosion. Of special interest was the fact that the grooving of the tubes at the front flue sheet, so prevalent in this class of locomotive, was entirely prevented. At this shopping the latest type of double electrodes were applied.



View Showing Upper Electrode Pipe and Early Method of Insulating and Supporting It

Locomotive 658, of the same class as No. 656 and in the same service, was shopped in December, 1925, at which time 155 tubes were scrapped due to being pitted and grooved; 155 new tubes and 55 safe-ended tubes were reapplied. In July, 1927, after 19 months of service, the locomotive was in the shop for light repairs, at which time no flues were removed. On February 4, 1929, the boiler entered the shop and 30 tubes were scrapped on account of pitting; also, the first and third courses and bottom half of the second course were pitted, requiring renewal. Other locomotives of this class might be mentioned. Locomotive 621 had three flue shoppings within a period of four years and eight months with a recorded loss of $965 due to scrapped, pitted tubes. Locomotive 625, in making 110,000 miles, developed, according to the master mechanic's report, 26 different tube failures, involving 94 pitted tubes, resulting in a loss of material of over $300.

Locomotive 251, operating between St. Louis and Kansas City, with its home terminal at Slater, Mo., was equipped with electrodes at the regular shopping in March, 1926, when the majority of the 288 tubes were scrapped because of pitting. At the same time, 178 grooved staybolts were renewed, and inspection showed the side sheets to be grooved but not seriously enough to require renewal. After three years of service, making a total of 108,744 miles without a tube failure, the boiler was again shopped in March, 1929, and found free from pitting, with one exception. The bottom electrode was discovered to be short circuited, and 30 tubes adjacent to it were pitted, 3 of them being scrapped. Locomotive 254, without the electrodes, had 225 pitted tubes renewed in the enginehouse previous to being shopped in September, 1927, when 93 additional pitted tubes were scrapped, making a total of 318 scrapped tubes caused by pitting during the time the locomotive was making 118,000 miles. The cost of the replacement tubes amounted to $760. Inspection showed the front flue sheet, firebox sheets and a large number of staybolts to be seriously grooved, requiring renewal, no estimate being made of the cost of material for this work.

How the Gunderson Process Works

The mechanism of boiler-metal corrosion, which the new process is designed to counteract, may be described as follows: The surface characteristics of boiler metal are never uniform, and, therefore, certain small areas have a greater electric potential or tendency to dissolve than other adjacent areas, these variations in the surface of the metal in effect acting as tiny batteries, wherein small electric currents are produced by solution of the iron as it forces hydrogen-ions to be deposited on the low potential surfaces. All boiler metal is inherently subject to this destructive electrolytic action, but only under certain water conditions. The solution of iron in the boiler water is accomplished by the iron forcing out hydrogen-ions and then uniting with the remaining portion of the water molecules to form iron hydrates. These hydrates react with oxygen to become oxides, some of which accentuate electrolytic action, thus explaining why pitting penetrates the boiler tubes and flues rapidly, once it gets started.

If mill-scale (iron oxide), for instance, or some other substance having a like low potential, is in contact with the iron surfaces, hydrogen is deposited much more easily and the iron is corroded faster. Any strain, resulting from cold working of the metal, or vibration in road service, increases the solution pressure or electric potential of the stressed portions and causes these portions to corrode in preference to the adjacent metal on which the hydrogen is deposited. The deposit of hydrogen on the boiler metal surface as a thin invisible film, however, effectually hinders and finally entirely prevents the deposit of additional hydrogen, and no more metal can dissolve until the hydrogen is removed by some agency. This is accomplished by dissolved oxygen in the boiler feedwater which proves effective in removing the hydrogen film by combining chemically with it to form water. The real function of the Gunderson Process is to maintain this film of hydrogen, producing a state of polarization like that found in batteries.

The new process sets up a protective condition on the interior surfaces of the boiler by means of an arsenic plating on which hydrogen is deposited and tenaciously retained. Two insulated iron-pipe electrodes are installed in the boiler, and an electric current of about four or five amperes at two volts from the headlight generator (or storage battery) is passed through the boiler water from these electrodes (anodes), the boiler metal being the negative pole of the circuit. A commercial chemical compound of arsenic is dissolved in the boiler water, from which the arsenic plates out on the boiler metal. The arsenic not only has the characteristic of retaining the hydrogen film but neutralizes the inequalities of solution pressure or electric potential which cause the localized action on the surface of the boiler metal.

Method of Installation—Operating Cost

The arsenic alone, without the electric current, is said not to be effective because the film on the interior boiler surfaces is soon destroyed by chemical combination with the dissolved oxygen in all boiler feedwaters. The electric current, without the arsenic, will not prevent localized corrosive action which takes place just as on battery plates.

The installation is made substantially as shown in

the drawing. The electrode stuffing boxes are usually located for convenience in the third course of the boiler shell.

If the tubes and flues are in the boiler when the installation is made, both anode pipes are placed above the tubes on opposite sides of the shell. If the tubes and flues are out of the boiler when the installation is made, the anode on the left side is located above the flues and the one on the right side is located diagonally opposite the first. Each anode is spaced equidistant between the shell and the flues. The clamp supports are assembled so as to grip snugly the insulating tubes which are placed around the 1-in. anode pipes. Metallic contact of the anode pipes with the boiler structure is avoided as this would short circuit the system. The positive pole of the generator is connected to the insulated electrodes and the negative pole is grounded at the generator. The generator voltage is cut down to two volts by means of suitable resistance coils placed in the electric circuit, these coils being being carried in a control box which also contains necessary fuses and an ammeter to show when the system is working. The control box is located at a point in the cab where it can be readily seen by the engineman. The storage battery and auxiliary equipment, when used, is located in a suitable steel box under the running board. Before putting the locomotive in service, sealed cylinders, containing five pounds of the polarizing chemical (a soluble arsenic compound) are placed in the boiler through a washout hole; thereafter a one pound cylinder is applied at least twice a month.

Little Maintenance Expense

Owing to the simplicity of the apparatus, there has been practically no maintenance expense for the Gunderson Process applications on C & A. locomotives. The installations are checked by electricians at each monthly locomotive inspection to determine if the wiring, fuses and resistance units are in good operating condition and if the electrodes are thoroughly insulated. The operating expense incident to the use of the process includes the cost of electric current (about 128 watts) taken from the headlight generator, the cost of arsenic compound, and the cost of replacing the anode pipes once in four years at the limit flue-shopping period. The iron pipe anodes distintegrate or waste away, but ordinarily have a service life of at least four years.

Operating Cost Is Low

The cost of the protective current when the turbo-generator is being run to furnish current for the locomotive lighting system is 0.6 cents an hour. With the battery installation, charging being accomplished direct from the generator during the time the latter is normally in operation, the cost of electric current is slightly higher. When lights are not necessary and the generator must be run to supply current for the electrodes alone, the cost is about 2.5 cents an hour. These costs, of course, vary with the efficiency of the generator and the cost of fuel. The annual cost of current per locomotive can easily be calculated from these figures when the approximate number of night-hours and daylight-hours a locomotive is in service is known. For average operation of a road locomotive, the annual cost is approximately $15.00.

The cost of arsenic compound, already prepared in individual tubes for application to the boiler, is 15 cents a pound. It is the practice on the Alton to apply one pound every 15 days, irrespective of water changes, so the cost of compound for each locomotive equipped amounts to 30 cents a month or $3.60 a year.

Rail Output Less in 1928

ACCORDING to statistics issued by the American Iron and Steel Institute, the production of steel rails in the United States in 1928 totaled 2,647,493 gross tons, or 158,993 tons less than in 1927 and 570,156 tons less than in 1926, the year of greatest production since 1913. The production of rails weighing 100 lb. per yard or more in 1928 was 1,922,177 tons or 9,771 tons less than in 1927 and 44,263 tons less than in 1926. However, the production of rails weighing 120 lb. or over increased from 617,524 tons in 1927 to 718,428 tons in 1928, or 100,904 tons. While the production of rails weighing 100 lb. per yard or more was less during 1928 than in the previous two years, it is significant that the tonnage of this classification of rail in 1928 represented a larger proportion of the total than in any previous year, amounting to 72.6 per cent in 1928 as compared with 68.8 in 1927, 61.1 in 1926 and 39 per cent in 1921.

Production of Rails by Processes, Gross Tons, 1913-1928

Years.	Open-hearth.	Bessemer.	Rerolled.*	Electric.	Total.
1913	2,527,710	817,591	155,043	2,436	3,502,780
1914	1,525,851	323,897	95,169	178	1,945,095
1915	1,775,168	326,952	102,083	....	2,204,203
1916	2,269,600	440,092	144,826	....	2,854,518
1917	2,292,197	533,325	118,639	....	2,944,161
1918	1,945,443	494,193	101,256	....	2,540,892
1919	1,893,250	214,121	96,422	50	2,203,843
1920	2,334,222	142,899	126,698	297	2,604,116
1921	2,027,215	55,559	96,039	5	2,178,818
1922	2,033,000	22,317	116,459	....	2,171,776
1923	2,738,779	25,877	139,742	118	2,904,516
1924	2,307,533	16,069	109,730	....	2,433,332
1925	2,691,823	9,687	83,747	....	2,785,257
1926	3,107,992	12,533	97,124	....	3,217,649
1927	2,717,865	1,566	87,055	....	2,806,486
1928	2,580,141	2,718	64,196	438	2,647,493

* Rerolled from old steel rails.

Girder or high T-rails for electric and street railways are included in these statistics. For recent years the tonnage of such rails was as follows: 1922, 128,878; 1923, 130,056; 1924, 85,553; 1925, 98,620; 1926, 116,374; 1927, 99,621; and 1928, 113,150 gross tons.

Production of Rails by Weight Per Yard, 1915-1928

Years	Under 50 pounds	50 and less than 85	85 and less than 100	100 and less than 120	120 pounds and over	Total gross tons
1915	254,101	518,291	742,816	688,995		2,204,203
1916	295,535	566,791	1,225,341	766,851		2,854,518
1917	308,258	882,673	989,704	763,526		2,944,161
1918	395,124	665,165	888,141	592,462		2,540,892
1919	263,803	495,577	965,571	478,892		2,203,843
1920	489,043	433,333	952,622	729,118		2,604,116
1921	211,568	214,936	902,748	849,566		2,178,818
1922	265,541	274,731	728,604	902,900		2,171,776
1923	272,794	300,907	864,965	1,465,850		2,904,516
1924	191,046	213,274	853,431	1,175,581		2,433,332
1925	163,607	219,648	765,371	1,636,631		2,785,257
1926	197,260	256,287	797,662	1,966,440		3,217,649
1927	161,836	173,257	539,445	1,314,424	617,524	2,806,486
1928	6,453	3,711 2,742	6,453	29	879	1,652 3893

The production of alloy steel rails in the United States during 1928 amounted to 6,453 tons, a considerable increase over the production in 1927, which amounted to 1,265 tons. Titanium rails in 1928 totaled 3,711 tons and manganese rails (10 per cent and over in manganese) totaled 2,713 tons. The statistics do not show the production of intermediate manganese steel rails as a separate classification.

Production of Alloy-Treated Steel Rails, 1919-1928

Years	Total production. Gross tons	Production by alloys: Titanium	Production by alloys: Other alloys	Production by processes: Open hearth and elect.	Production by processes: Bessemer	Production by weight per yard: Under 50 lbs.	50 and under 85 lbs.	85 and under 100 lbs.	100 and under 120 lbs.	120 lbs. and over
1919	6,476	6,207	269	6,476	....	....	....	3,920	2,556	
1920	12,909	11,652	1,257	12,909	....	....	514	5,069	7,326	
1921	6,276	2,804	3,472	6,276	....	....	71	4,277	1,928	
1922	3,163	2,493	670	3,163	....	....	321	835	2,007	
1923	2,142	346	1,796	2,142	....	....	56	317	1,769	
1924	5,167	1,696	3,471	5,167	....	....	....	847	4,320	
1925	4,009	1,616	2,393	4,009	....	70	47	....	3,892	
1926	4,216	1,099	3,117	4,216	....	....	42	1,027	3,147	
1927	1,265	....	1,265	1,265	....	....	....	374	391	500
1928	6,453	3,711	2,742	6,453	....	29	....	879	1,652	3,893

Container and L. C. L. Operating Costs Compared

New York Central and Pennsylvania exhibits indicate greater net from container traffic while Lehigh Valley reports loss

EXHIBITS designed to compare the cost of container handling of l.c.l. freight on the New York Central, Pennsylvania and Lehigh Valley with the cost of handling this traffic in regular merchandise car movements were submitted by witnesses for these carriers at the New York sessions of the hearing in connection with the Interstate Commerce Commission's investigation into present container services. These New York sessions opened on April 3 before Commissioner Claude R. Porter and Attorney-Examiner Harry C. Ames and continued until April 6 when a recess was taken until April 10. The hearing resumed on the latter date and was still in session when this issue of the *Railway Age* went to press.

In addition to its cost witness, the New York Central presented the testimony of several patrons and representatives of chambers of commerce who were interested in the container service and favored its extension as proposed in the suspended tariffs. The great majority of these, in response to questions from Examiner Ames, stated that they had found advantages in the container service which would induce them to continue shipping in containers even though the rates were the same as the regular l.c.l class rates.

B. & M. Opposes Long-Haul Rates

The Boston & Maine, through the testimony of J. R. MacAnanny, assistant freight traffic manager, stated that its experience had revealed that the container is not satisfactory for long-haul merchandise service. This witness conceded that there may be a field for the container in short-haul competition with highway carriers but added that so far as the Boston & Maine is concerned the bulk container in which it handles brick from Mechanicville, N. Y., to connections for New York City and Brooklyn is "the only satisfactory container operation we have thus far discovered." In this connection Mr. MacAnanny stated, that the B. & M. is working on the development of a side-dump bulk container which it hopes will be adaptable to the handling of coal.

Turning to the merchandise container, Mr. MacAnanny stated that business of this character came to the B. & M. from an electric line over which it had formerly moved between Boston and Springfield and Boston and Worcester. The containers belong to the Freight Container Service Company of Boston and the B. & M. has equipped 14 cars for the service. There is no rental charge, since the container company solicits the freight and makes its own rates to shippers.

At the outset the rates were 20 cents per 100 lb. between Boston and Springfield and 10 cents per 100 lb. between Boston and Worcester. The rate is now $6.50 per container between the former points and $4.50 per container between the latter. The witness stated that his road will try to continue this short-haul container service only in order to meet the highway competition. He added, however, that in connection with such continuance it was planned to cancel the container basis of rates and return to the weight basis.

New Traffic But Less Revenue

Declaring that the container rate basis brought new traffic but much less revenue, Mr. MacAnanny presented an exhibit analyzing freight movements and revenue between Boston and Springfield and Boston and Worcester. During the four-week period selected for the study, 62 cars with 266 loaded containers carried 1,754,325 lb. of freight between Boston and Springfield, a distance of 122 miles, and earned $1,729 in gross revenue. This is equivalent to $27.88 per car or 9.85 cents per 100 lb. Had the same traffic moved in the regular merchandise service under the l.c.l class rates the gross revenue would have been $7,429.09—the equivalent of $119.74 per car or 42.35 cents per 100 lb. In the return direction, between Springfield and Boston, 58 container cars carried 122 loaded and 154 empty containers, handling 519,609 tons of freight for a gross revenue of $940.50. This latter would have been $2,239.84 under the regular l.c.l. rates. A charge of $1 is levied for the return of an empty container.

Between Boston and Worcester, a distance of 52 miles, 30 cars carried 114 loaded and three empty containers, the former with 729,853 lb. of freight. The gross revenue was $574.50 as compared with $2,373.12 which regular l.c.l. rates would have produced on the same traffic. The revenue per car in this movement was $19.15 as compared with $79.10 under the regular rates and per 100 lb. it was 7.87 cents as compared with 32.52 cents. In the return direction, from Worcester to Boston, 37 cars carried 136 loaded containers with 696,509 lb. of freight. (Here the number of loaded containers is greater though the total tonnage is less than in the opposite direction. It is explained, however, by the fact that the average load per container from Boston to Worcester was 6,402 lb. whereas from Worcester to Boston the average weight of contents was 5,121 lb.) In this eastbound direction, the gross revenue was $621 as compared to the $2,142.68 which l.c.l. rates would have produced. The former is equivalent to $16.78 per car and 8.92 cents per 100 lb. and the latter to $57.91 per car and 30.76 cents per 100 lb. The totals revealed that the container traffic, during the period under review, produced $3,865 in gross revenue whereas the gross revenue would have been $14,184.73 if the l.c.l. rates applied. Mr. MacAnanny pointed out, that the traffic would have been less under l.c.l rates, since much of it was attracted by the low container rate. He reiterated, however, the desire of his company to return to the flat rate per 100 lb. with which the service was inaugurated.

With the introduction of the long haul container rates, Mr. MacAnanny stated, the Universal Carload-

ing & Distributing Company had commenced to accept shoes and textiles, the former of which the forwarding company had seldom touched because of the high carload rate and the latter of which it never touched because textiles have no carload rating. The situation is such, he added, that the Boston & Maine must either reduce its higher class ratings or find some vehicle to meet the present container rates. In response to a question, the witness stated that the Universal does not now operate consolidated box car service over the Boston & Maine as it formerly did before going to the Boston & Albany. Asked by another questioner to state what he considered the problem to be, Mr. MacAnanny replied that it was "the loss of considerable traffic and the threat to cut the l.c.l rates." He insisted that the B. & M. short-haul container rates are not comparable to the long-haul container rates in effect over the New York Central.

Mr. MacAnanny also explained the freight "express" service which is operated between several B. & M. points and which grants special rates and carload minimum charges to designated local "express" companies which perform a pick-up and delivery service. These freight "express" rates are flat charges per 100 lb. between the points served, the basis to which the B. & M. now wishes to return in connection with its container service.

Cleveland Chamber on Rates

The series of New York Central patrons and the representatives of chambers of commerce, mentioned in the foregoing, followed Mr. MacAnanny. Among these was A. N. Brown, assistant transportation commissioner, Cleveland Chamber of Commerce, who stated that his organization approves of the container service and favors its extension but takes no position as to the rates or the agency to be used in employing the service. He stated that the container is a move toward flexibility of equipment and is an attempt to fit equipment to the needs of business rather than business to equipment. The Cleveland Chamber took no position regarding rates, Mr. Brown explained, because it regarded the development as an experiment and while it wants the service at reduced rates if it can be given, it does not care to see railroads donate their services.

During the course of this shipper testimony, Examiner Ames called D. T. Lawrence, chairman of the Official Classification Committee. Mr. Lawrence stated that his organization had paid no attention to the container rates but agreed to prepare an exhibit which would compare these container rates with existing class rates.

E. M. Dillhoefer, president, Container Freight Forwarding Company, explained the consolidated container service which his company provides out of Cleveland and Buffalo in competition with the Universal. He stated that special rates are sometimes made to certain shippers for competitive reasons. He was followed by A. E. Boone, chairman of the board of directors of the National Carloading Corporation and vice-president of the Horstmann Trucking Company of New York. Mr. Boone explained that his company performed consolidated box car and container services. It has been in business about two months and its capital stock was subscribed entirely by truckmen operating in the cities of New York, Chicago and St. Louis. These forwarding company witnesses were followed by representatives of the Detroit & Cleveland Navigation Company and the Cleveland & Buffalo Transit Company, steamer operators on the Great Lakes, who protested that the container rates would result in losses of traffic for them.

Complains of Long Haul Container Rates

The Detroit Board of Commerce complained that

New York Central

L.C.L. Consignments Between New York and Buffalo Container Cars vs. Mdse, L.C.L. Box Cars Test Period Oct., 1928. Mileage, 438

	Mdse. L.C.L. Box Cars	Container Cars	Differences
FORMULA	WB tons, 172.19; EB tons, 84.62; Total, 256.81 Cars, 33 WB; 25 EB	WB tons, 172.19; EB tons, 84.62; Total, 256.81 Cont. Cars, 14 WB; 7 EB Containers loaded, 55 WB; 27 EB	
Source:—N. Y. C. R. R. Records and Special Tests.	Loadings, 5.3 tons per car Tare Wt., 20.0 tons Service Days, 4 Revenue, Actual Empty Car Movement, 18.43% of loaded movement	Loadings per Container, WB, 3.14 T; EB, 3.20 T Tare Wt., 33 tons Service Days, 4 Revenue, as per tariff Container cars aver. 4 loaded containers	
Revenue Gross			
Mdse. L.C.L. Between New York and Buffalo—256.81 Tons	$3,533.97	$2,237.09	$1,296.88*
Freight Claim			
256.81 tons @ $.1234	31.69	.....	31.69
Bills and Other Clerical Costs			
Mdse. Cars, 1833 items @ $.355	650.72	.....	.....
Cont. Cars, 30 items @ $.355	.....	10.65	640.07
Platform and Crane Costs			
Plat. Mdse. Cars, 256.81 tons @ $2.32 per ton	594.83	.....	.....
Crane Costs handling loaded containers (These costs cover both termini.)	.....	24.61	570.22
Switching Costs (Cover both termini)			
Mdse. L.C.L. Cars	475.16	.....	.....
Container Cars	.....	183.89	291.27
Road Haul Costs			
Mdse. L.C.L. cars including Empty movement—815,740 GTM @ $.7017 per 1000 GTM.	572.41	.....	.....
Container Cars—454,711 GTM.	.....	319.07	253.34
Car Maintenance Costs			
@ $.4566 per serviceable car day	105.93	.....	.....
@ $.4566 per serviceable car day	.....	38.35	67.58
Total Expenses	$2,430.74	$576.57	$1,854.17
Net Revenue	$1,103.23	$1,660.52	$557.29†
SUMMARY			
Gross Revenue Per Ton	$13.76	$8.71	$5.05*
Expenses Per Ton	9.47	2.24	7.23a
Net Revenue per Ton	4.29	6.47	2.18b
Net Saving Per Container Car			$26.54

Note: * Decrease in Gross Revenue. † Increase in Net Revenue. a Saving in Expenses. b Increase in Net Revenue to N. Y. C. R. R. for each ton Mdse. L.C.L. Freight Handled in Container Cars.

container rates disregard the principle of a decreasing rate with increased distances. Its witness, L. G. Macomber, stated that the long-haul container charge is out of line with the short-haul charge and for this reason his organization desired a revision of the charges or else a cancellation of the container tariffs.

Cost Exhibits Presented

In connection with the cost exhibits it was explained that the New York Central, Pennsylvania and Lehigh Valley, following the request of Examiner Ames for cost comparisons, had appointed a committee to devise a formula whereby the cost of handling freight in containers could be compared with the cost of handling the same traffic in regular l.c.l. merchandise service. A 30-day test period was taken in each case. The studies indicate that the New York Central, if the selected movement had been handled in container service, would have received $26.54 more in net revenue per car; the Pennsylvania would have received $8.41 more while the Lehigh Valley would have received $17.32 less per car. In the latter case there appears the item of rental charges for containers amounting to $129, which does not appear in the New York Central and Pennsylvania exhibits. The New York Central exhibit was presented by H. M. Bassett, assistant to the comptroller, the Pennsylvania by J. J. Neal, special agent, and the Lehigh Valley by R. W. Zimmerman, special accountant. These witnesses appeared on April 6 but cross-examination was deferred until April 10.

The cost comparisons of each of the three roads appear in the accompanying tables while the formula by which they were compiled was outlined in the following manner:

The assumption on which the committee proceeded was that, for the test period the l.c.l. tonnage actually moving between the chosen termini should be considered, and that as far as the revenue is concerned the actual revenue for such shipments as shown by the waybills would be secured; that this same tonnage would then be considered as moving in container cars, and the container car tariffs would be applied, so as to obtain the amount of the revenue had the tonnage during this test period and between the given termini been handled in container cars.

The expenses are to be set up as a series of differences as between what actually happened in merchandise cars for the test period shipments versus what expenses would have been for the same tonnage if handled in container cars, under methods now in use where container car shipments are made.

1. Freight Claims on l.c.l. Shipments Merchandise Cars—vs.—Container Cars.

Use the tonnage 1928 A. R. A. form of freight claims and divide same by the l.c.l. tonnage merchandise movement. This will give the freight claim per ton merchandise movement. If merchandise l.c.l. tonnage is not available use the carriers' commodity statements to obtain the l.c.l tonnage. A canvass of the situation shows that none of the three railroads have any claims on container movements to date.

2. Bills and Other Clerical Costs (Consignment Costs).

Each carrier from its records will secure the costs per item of consignment of l.c.l shipments, this cost to include rating, shipping order, preparing waybill, preparing freight bill, collection, remitting, reporting, and other incidentals, general accounting, revisions, tracing, handling claims, handling overs and shorts and will include office forces, such as messengers, telephone attendants, and other office force. It shall include the necessary blanks for waybill, freight bill, bills of lading, and shall include the expenses of the Auditor of Freight Accounts. Exclude Agents' and Asst. Agents' salaries.

3. Number of Consignments of l.c.l. Merchandise Per Car.

For the 30-day test period, upon the service under review, each carrier will count the number of consignments and obtain their total weight and deduce from same the average weight per consignment (deduct such l.c.l. items as manifestly could not move in containers).

4. Number of Consignment Bills per Container.

For all three railroads only one bill is made per container, and in connection therewith each carrier will count during the test period the number of loaded containers actually used and the tonnage included therein, and deduce therefrom the average load.

With the above determined, in order to get the comparative costs, each carrier will apply to the two methods of handling l.c.l freight, the cost secured per consignment.

5. Platform Labor.

Pennsylvania

Less Carload Consignments Between New York and Baltimore Container Cars vs. Merchandise Less Carload Box Cars Test Period, November, 1928. Mileage, 186

FORMULA Source:—Pennsylvania Railroad Records and Special Tests.	Merchandise Less Carload Box Cars Tons 260.62 Eastbound 421.14 Westbound Total 681.76	Container Cars Tons 656.05 Eastbound 903.22 Westbound Total 1,559.27 Loading per Container, 3.64 Tons Containers per Car, 3.89	Differences
Revenue Gross			
Merchandise Less Carload between New York and Baltimore—681.76 tons	$7,174.57	$3,824.42	$3,350.15*
Freight Claims			
681.76 Tons @ $0.287	$195.66	.....	$195.66
Clerical Costs			
Less Carload Merchandise Cars, 2875 items @ $0.462	1,327.73	.....	.....
Container Cars, 187 items @ $0.499	.....	$93.31	1,234.42
Platform & Crane Costs			
Less Carload Mdse. Cars, 681.76 Tons @ $2.31	1,575.71	.....	.....
Crane Costs, 187 Containers @ $0.301	.....	56.29	1,519.42
Switching Costs (cover both termini)			
Less Carload Merchandise Cars	385.66	.....	.....
Container Cars, 48 @ $3.69	.....	177.12	208.54
Road Haul Costs (include empty movement)			
Less Carload Merchandise Cars, 1,194,281 Gross Ton Miles @ .661 per 1000	789.42	.....	.....
Container Cars, 418,501 Gross Ton Miles @ .661 per 1000	.....	276.63	512.79
Car Maintenance			
Less Carload Merchandise Cars, 276.6 Car Days @ $0.4059	112.27	.....	.....
Container Cars, 72 Car Days @ $0.4059	.....	29.22	83.05
Total Expenses	$4,386.45	$632.57	$3,753.88
Net Revenue	$2,788.12	$3,191.85	$403.73†
SUMMARY			
Gross Revenue Per Ton	$10.52	$5.61	$4.91*
Certain Expenses Per Ton	6.43	.93	5.50a
Difference Between Gross Revenue and Certain Expenses	4.09	4.68	.59b
Saving Per Container Car			$8.41

Note: * Decrease in Gross Revenue. † Increase in Net Revenue. a Saving in Expenses. b Increase in Net Revenue for each ton Merchandise Less Carload Freight handled in Container Cars.

The platform foreman labor payroll exclusively of team track payroll shall be used, and the cost shall be divided by the total platform tonnage handled, including inbound, outbound, and transfer tonnage.

6. l.c.l. Transfer Costs at Intermediate Transfers.

The N. Y. C. has none. The other two carriers will obtain the cost of handling l.c.l at transfer platforms by dividing the total tonnage handled into the total platform payroll expense. Ascertain the amount of tonnage passing through transfer for the service under review and apply the unit platform cost to such tonnage.

7. Switching Costs.

Switching costs are to be obtained at each terminal and at intermediate transfers, if there are any. These costs shall include locomotive repairs, crew wages, fuel, lubricants, water, enginehouse expenses yard, and yard supplies and expenses, but shall exclude interest and depreciation. Carriers will obtain the cost per engine hour of service switching cars and apply it to the cars switched, to obtain cost per car switched, both as to l.c.l. merchandise cars and to container car shipments. A field test will be made by each carrier for a period of three days (Wednesday, Thursday and Friday) and the actual engine hour costs for the above accounts obtained for l.c.l. merchandise and for container car services separately.

8. Crane Operation Including Labor, Grease, Current, Etc.

Each carrier will secure for its operations the actual cost per container handled during the test period and apply same.

9. Road Haul.

Each carrier will obtain from its O. S. reports the freight proportion of the charges covered by items 1-01 to 1-07 inclusive, shown thereon (locomotive repairs, train enginemen, fuel for train locomotives, other locomotive supplies, enginehouse expenses train, trainmen, train supplies and expenses). The figures are those now reported on the O. S. forms for the territory involved.

The carriers will use 18.43% for box car empty return movement (this empty movement being that portion of empty car return movement assignable to loaded movement) and each carrier shall include empty container car movement, if any exists, in computing container car handling costs.

The road haul cost per 1000 gross ton miles (including locomotive and tender) thus obtained will be applied to present merchandise gross ton miles made in the 30-day test period versus container cars (including containers) gross ton miles to handle same tonnage.

10. Maintenance of Box Cars Handling l.c.l. Merchandise.

The carriers will obtain the total of account 314 Freight Car Repairs, for the year 1928, if possible (if not, last year available), and divide same by the serviceable car days for the same year, as per Car Service Division Reports to determine cost per car per day.

This result will be applied to the number of car days in the test period for l.c.l. merchandise cars in the service under review, and also applied to the container car days needed to move said traffic.

Cross Examination on Cost Studies

Returning on April 10 for cross examination, Mr. Bassett of the New York Central was first questioned by M. B. Pierce, general attorney of the Erie. Mr. Pierce brought out that in applying the l.c.l. tonnage figures to the assumed container movement of this same freight the New York Central had excluded such freight as could not have been moved in containers by reason of its physical characteristics. It was also brought out that some additional tonnage may have been loaded into these box cars assigned to the selected l.c.l. movement at some points enroute between Buffalo and New York. Mr. Bassett next agreed with this questioner that the cost figures included no item for interest on investment, taxes or depreciation on cranes. He also stated that no charge was included for the use of the container.

Here the cross examination was taken up by Examiner Ames who asked the witness if the unit cost of

Lehigh Valley

L.C.L. Consignments Between Newark and Buffalo Container Cars vs. Mdse. L.C.L. Box Cars Test Period, Oct., 1928. Mileage, 447

FORMULA L. V. R. R.—Records and Special Tests.	Mdse. L.C.L. Box Cars W.B. tons, 47.55; E.B. tons, 58.24; total, 105.79 Tare weight and service days actual for each car Revenue—Actual Empty car movement, 18.43% of loaded movement	Container Cars W.B. tons, 47.55; E.B. tons, 58.24; total, 105.79 Cars—W.B., 4; E.B., 10 Loaded containers: W.B., 14; E.B., 21 Tare weight and service days actual for each car Revenue—As per tarift Empty car movement, 18.43% of loaded movement Container cars average 2.59 loaded containers	Difference
Revenue			
Mdse. L.C.L. Between Newark and Buffalo—105.79 tons	$1,409.12	$950.81	$458.31
EXPENSES			
Freight Claims			
270 consignments @ $.04035	10.89	.....	10.89
Bills and Other Clerical Costs			
Mdse. cars, 270 items @ .46826	126.43	.....	.....
Container cars, 14 items @ .46826	.....	6.55	119.88
Platform Costs—Terminals			
105.79 tons @ .9653	102.12	.....	102.12
Platform Costs—Transfer			
Manchester, 75.63 tons @ .6873	51.98	.....	51.98
Oak Island, 16.55 tons @ .7214	11.93	.....	11.93
Switching Costs (covers terminals and transfers)	81.83	61.64	20.19
Rental of Containers	.....	129.00	*129.00
Road Haul Costs			
Mdse. L.C.L. Cars, 203,491 G.T.M. @ .91488 per 1000	186.17	.....	.....
Container Cars, 182,212 G.T.M. @ .91488 per 1000	.....	166.70	19.47
Car Maintenance Costs			
Mdse. Cars @ 35 cents per day	19.55	.....	.....
Container Cars @ 35 cents per day	.....	11.20	8.35
Total Expenses	$590.90	$375.09	$215.81
Net Revenue	$818.22	$575.72	$242.50
SUMMARY			
Revenue per ton	$13.32	$8.99	$4.33
Expense per ton	5.59	3.55	2.04
Net Revenue per ton	$7.73	5.44	2.29
Loss per container car			$17.32

Note: * Increase in expenses.

handling remaining l.c.l. freight would not be increased because of a diversion of considerable l.c.l. tonnage to the container service. Mr. Bassett, however, did not think the difference would be sufficiently great to make any substantial change in the figures. The examiner next sought an explanation of the clerical costs and specifically of the 1833 items which the New York Central recorded under this heading for l.c.l. movements and its reduction to 30 items for container movements. The witness stated that the figure of 1833 items under the l.c.l. movement was the result of an actual count. He explained the 30 accounting items assigned to the container service as follows: Of the total container movement six-sevenths is handled through the Universal Car Loading & Distributing Company. Since 21 container cars were involved in the assumed movement, 18 of these cars would thus be handled by the Universal. With such handling through the forwarder only one consignment record is issued for each container car, or a total of 18 consignments. The other three cars, it was assumed, would have the reported average of four loaded containers, each container requiring a separate consignment or 12 consignments in all. Thus it will be seen that the 18 consignments assumed for the Universal and the 12 assumed for the individuals involved in the remaining one-seventh of the business make the total of 30 appearing in the exhibit.

Examiner Ames again turned to the question of a greater cost on remaining l.c.l. freight if any considerable amount were diverted to the container service and secured from the witness the admission that ultimate economy would only be realized when clerical forces are reduced as a result of the anticipated savings.

With brief further questioning by representatives of protesting western roads, Mr. Bassett was excused and Mr. Zimmerman of the Lehigh Valley was summoned to explain the cost exhibit which he had submitted on April 6. From his cross examination of this witness, Mr. Pierce of the Erie brought out that no item was included for crane costs, because the Lehigh Valley leases its crane facilities at Newark and Buffalo to the Universal Car Loading & Distributing Company. It later developed that the Universal handles all container business which is moved over the Lehigh Valley between these two points. When Examiner Ames was told by the witness that it was necessary to exclude only a few tons of freight as being unsuitable for container handling, he asked E. H. Burgess, general solicitor, Lehigh Valley, to present an operating witness, who understood the character of freight going into containers. In this connection the examiner expressed surprise that it was necessary to eliminate such a small tonnage during the month of the study.

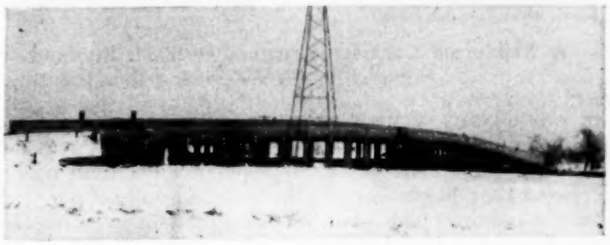
In concluding his cross examination of Mr. Zimmerman, Examiner Ames repeated to this witness the question which he had asked Mr. Bassett regarding increased costs on l.c.l. freight which remained outside the container service. Mr. Zimmerman agreed that if such increased costs were shown to be present they were a proper charge against the container service.

Mr. Neal of the Pennsylvania following Mr. Zimmerman and was cross examined on the Pennsylvania cost study. This cross examination was along the same lines as that of the two preceding witnesses. At its close Examiner Ames asked counsel for the New York Central, Pennsylvania and Lehigh Valley to produce as witnesses, the foremen or whatever employees at their respective freight houses are in actual charge of handling the freight which moves in containers. It was agreed by counsel that these witnesses would appear on April 11.

Wisconsin Separated Grades at 23 Points in 1928

By H. D. Blake
Grade Crossing Engineer, Wisconsin Highway Commission, Madison, Wis.

THE Wisconsin Highway Commission has undertaken the construction of more new highway-railroad grade separation structures during the season just closed than were built in all the previous years of its operations. Eleven highway bridges over railroad tracks and seven new railroad bridges over highways are under construction or completed. In addition, two existing overhead structures and three subways have been rebuilt to provide crossings that are



A Reinforced Concrete Deck Girder Structure Carrying Two Highways Over C. & N. W. Main Line

considered safe for motor traffic by public officers. Twenty-three structures, in all, were placed under construction or completed during the last year.

Wisconsin was one of the first states in the middle west to realize clearly that the elimination of railroad grade crossings was one of the major problems of its highway department. The rapid development of motor traffic during the last ten years, with the accompanying construction of a large mileage of high speed highways, has focused the attention of the public more

This Structure Eliminated a Narrow Right Angle Opening

and more upon the constantly mounting total of crossing accidents, with their attendant fatalities. The railroads, at the same time, have resisted the demands of public officers for their financial participation in the cost of removal of the crossings, claiming that the benefits were all to the public and that they should be asked to pay only a minor portion of the cost. They are supported in this contention by a recent decision of the United States Supreme Court which held that the responsibility at railroad crossings was entirely upon the driver of the automobile. The result has been delay and litigation extending over long periods of time, with construction postponed until, in many cases, the matter was ended by a decision of the State Supreme Court.

In the summer of 1926 a conference of highway commission, railway commission and railroad officers

was called by the highway commission and all angles of the problem were given careful consideration. The highway engineers presented the so-called increased cost plan of procedure, in which the railroads were asked to share only in the extra expense involved in road and bridge construction made necessary to eliminate the crossing hazard. Realizing that the interest of the public required the removal of crossings as rapidly as possible and on the agreement of railroad engineers

A Reinforced Concrete Structure Over M. St. P. & S. S. M. Branch Line

to waive many of their objections and to provide funds for a well defined program of improvements, it was decided, for the time being, to apportion the item of increased cost 40 per cent to the railroad and 60 per cent to the public. The plan was accepted in principle by the smaller roads, the others making many reservations, but was put into effect at once for the next year's operation.

Under the new plan of co-operative procedure adopted for 1927, state trunk highway traffic was diverted from 37 crossings at a cost to the railroads of about $75,000. In the season just closed 52 crossings were eliminated in the same way, with total contributions from the carriers of nearly half a million dollars. This may be compared with 211 similar eliminations in the 12 years that preceded 1927, at a total cost to the railroads of $291,000. While some of the roads have conformed slowly, it is felt that the results accomplished under the new plan show definite progress toward the ultimate removal of all of the 700 grade crossings still remaining on the state trunk highway system. It is encouraging to note that in the construction season of 1928 the commission has been able for the first time to place all railroad crossing elimination projects planned for that year under contract for construction with the assurance that the railroads would pay an agreed portion of the cost. Work was started on all of the projects and in most cases they were completed and opened to traffic.

The legislature of 1927 provided $100,000 per annum to cover a portion of the state's share of the cost of the more expensive projects, the remainder being furnished by the counties from the road construction funds. Surveys have been completed for next year's work and it appears that the 1929 program will be equal to or greater than in 1928.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended March 30 amounted to 967,029 cars, an increase of 18,286 cars as compared with loading in the corresponding week of last year but a decrease of 19,433 cars from the total for the corresponding week of 1927. The increase in the total over a year ago was due principally to the heavy movement of miscellaneous freight, while a decrease in coal loading accounted for the decline from the total for the corresponding week two years ago. Loading in the Southern and Northwestern districts was smaller than last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, March 30, 1929

Districts	1929	1928	1927
Eastern	227,549	216,545	229,394
Allegheny	200,291	191,996	209,799
Pocahontas	50,073	48,349	57,186
Southern	157,933	163,448	163,070
Northwestern	115,633	116,282	116,670
Central Western	134,623	133,839	135,006
Southwestern	80,927	78,284	75,332
Total Western Districts	331,183	328,405	327,013
Total All Roads	967,029	948,743	986,462
Commodities			
Grain and Grain Products	39,398	43,305	37,500
Live Stock	23,605	27,416	26,926
Coal	128,350	151,070	174,709
Coke	11,415	10,243	12,072
Forest Products	71,275	68,060	70,832
Ore	11,888	8,412	11,351
Merchandise L.C.L.	265,854	261,652	263,989
Miscellaneous	415,244	378,585	389,083
March 30	967,029	948,743	986,462
March 23	960,698	950,194	1,003,536
March 16	957,460	942,572	1,001,932
March 9	945,770	951,556	1,000,754
March 2	976,987	959,494	989,863
Cumulative total, 13 weeks	12,146,680	11,792,196	12,541,125

The freight car surplus averaged 261,290 cars during the period ended March 23, as compared with 238,518 cars on March 15. The total included 117,987 coal cars, 96,587 box cars, 27,435 stock cars and 10,540 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended March 30 totalled 61,478 cars, a decrease from the present week of 4,883 cars and an increase over the same week last year of 105 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
March 30, 1929	61,478	43,931
March 23, 1929	66,361	47,112
March 16, 1929	66,424	46,640
March 31, 1928	61,373	41,423
Cumulative Totals for Canada		
March 30, 1929	805,206	560,986
March 31, 1928	817,343	516,469
April 2, 1927	790,756	507,590

Relocating an Important Trunk Highway Over C. St. P. M. & O. Main Line

Great Northern Electric Locomotive Operation

Accumulations of moisture caused by temperature variations —Condition corrected by re-circulation of ventilating air

By D. J. Kerr

Assistant to Vice-President in Charge of Operation,
Great Northern Railway

WHEN the Cascade tunnel was opened on January 12, it was the culmination of a program of improvement on the Cascade division of which the tunnel itself was only one of the three major parts, the others being the construction of 19 miles of new line on the east slope of the Cascades and the electrification of the entire line from Wenatchee on the east slope to Skykomish at the foot of the mountain on the west slope.

The tunnel was a completely finished project on the day it was opened. Unlike the Moffatt tunnel in Colorado, which while open to operation, still requires a permanent lining, the Cascade tunnel on the day of its opening was completely lined from end to end with concrete. There is little more to say of the Cascade tunnel itself except that its completion and operation through it have fulfilled the expectation that no artificial ventilation of any kind would be necessary to maintain a stream of pure air through the tunnel.

Most of the long tunnels of the world have been constructed with a grade upwards from each end, this being done to facilitate construction, but in the case of the Cascade tunnel the grade is uniformly up-hill from west to east, resulting in a strong air current in that direction, which with the absence of steam locomotives, makes it entirely comfortable in the tunnel at all times. As a rule the air in the tunnel is clear enough to see the portal which appears as a pin hole from points as much as 3½ or 4 miles from the entrance.

Severe Weather Complicates New Operating Conditions

Changing from steam to electrical power and beginning train operation through the new tunnel and over the new approaches all at the same time imposed a rather severe test upon these untried facilities, particularly as the opening came at the time of year when weather conditions in the Cascades are most severe and was coincident with the placing in effect of a new fast schedule between Spokane and Seattle.

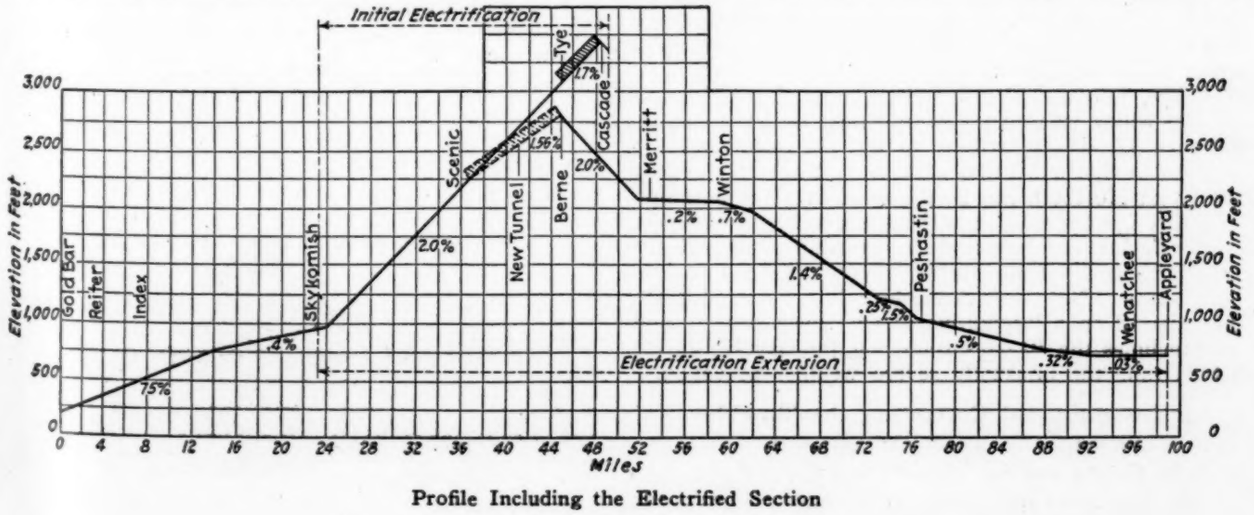
It also happened that immediately after the opening of the tunnel there followed a period of weather in the Cascades with temperatures much below those ordinarily prevailing even at that season of the year.

No new project of this magnitude can be put into use without some difficulties and it will be of interest to those who have followed these improvements in the Cascades to know what difficulties were encountered and how singularly simple a solution was found once the causes were definitely determined.

Power Supply and Locomotives

The line electrified extends from Wenatchee, Wash., on the east, to Skykomish, Wash., on the west, a distance of 73 miles. The system adopted is that of the high-tension, single-phase, alternating-current trolley, coupled with the use of motor generator locomotives, having direct current traction motors. Power is supplied at three points: namely, at the two ends, Wenatchee and Skyomish, respectively, and also at a point near Leavenworth, Wash., 23 miles west of Wenatchee.

The motive power consists of four single-cab General Electric locomotives of the type 1-C-C-1, each cab having six driving axles (the weight per axle being close to 70,000 lbs.) and 10 Westinghouse single cabs of the classification 1-D-1, each cab having four driving axles also with a weight per axle of approximately 70,000 lbs. All of these locomotives have been delivered



Profile Including the Electrified Section

and are in service, except two of the Westinghouse cabs which will be delivered early this spring. Four of the Westinghouse cabs are equipped with standard couplers all around, and are operated either singly or in pairs, the remainder being coupled together by unit bars semi-permanently in pairs.

Operation

The daily traffic over the line between Wenatchee and Skykomish consists ordinarily of two heavy passenger trains in each direction (Oriental Limited and Glacier Park Limited), one local passenger train in each direction, and one express and mail train in each direction, together with a freight movement, with east bound business prevailing, of about 150 to 200 cars per day. There are also frequent special movements of silk trains, etc.

One General Electric cab is generally assigned to each heavy passenger train, while a single Westinghouse cab is used on the express and mail trains. For the local passenger train a small locomotive which had been in service on the 6600-volt, single-phase electrification south of Spokane is used, the 6600-volt transformer having been replaced by an 11,000-volt transformer with 6600-volt taps, so this small locomotive is available for work either on the line south of Spokane or on the Cascade division. Since all locomotives are of rather similar characteristics all are suitable for use in either passenger or freight service, although the older semi-permanently coupled Westinghouse locomotives, because of lower speed characteristics are assigned as far as possible to freight helper services between Skykomish and Merritt. A 3200-ton train is readily handled out of Skykomish eastbound with a double-cab Westinghouse locomotive and a second double-cab locomotive as helper from Skykomish to Merritt. All of the locomotives are equipped with air blown transformers. The motor generator set is self-ventilated and traction motors are also air blown.

Effects of Sudden Change in Temperature

Reference has been made to the unusually severe temperatures following the opening of the tunnel on January 12, and to the direction of air through the tunnel from west to east. The temperatures in the tunnel even a short distance from either portal have remained constantly at 55 to 60 deg. Fahr. irrespective of the out-door temperatures. and a short period of operation developed the fact that the one condition which had not been fully provided for in the design of the locomotives was the effect of the sudden change from below zero temperatures at the portal to the warm moist air in the tunnel.

Taking into consideration the magnitude of the new project which was placed in operation on the night of January 12, it is a tribute to the personnel and the equipment that since that date every train operated by the Great Northern has been moved over the new line and through the new tunnel and in spite of the new train schedule for passenger trains making much faster time between Spokane and Seattle than had theretofore been made. Not a single failure has occurred since January 12 on a locomotive in passenger service, and this includes the 30 days following January 12, during which time the unusually severe weather prevailed.

Locating and Correcting the Trouble

Such difficulties as developed occurred on locomotives in freight service. After a few days of operation on the new route the following facts were developed: First, that no failures were occurring on passenger trains. Second, that no failures occurred on eastbound freight trains. Third, that such locomotive failures as did occur were on westbound freight trains and usually on freight trains which had had some delays near the summit because of meeting other trains or for other reasons.

It was thought at first that these difficulties, which usually occurred towards the west end of the tunnel, or after leaving the tunnel, were due to high voltage surges on the trolley line, coupled with the moisture conditions in the tunnel. Instruments capable of recording any such momentary surges were obtained and placed both on the trolley line and in the locomotives, but the films from these instruments showed that there were no unusual surges. The failures generally took place either in current or main transformers.

The volume of air required by all of the blowers in one locomotive is 600 cu. ft. per second. While it was possible to recirculate within the cab the air from the motor generator set no provision had been made for recirculating the air from the transformer blowers. In a typical case with the temperatures out-doors near zero with the locomotive working to its capacity from Wenatchee to the top of the hill at Berne, the temperature at the intake of the transformer blowers was found to be 29 deg. Fahr. even with the recirculation of the motor generator air. Entering the tunnel from the east under these circumstances resulted in frost building itself up on the cold metal surfaces, which as the engine advanced into the warmer tunnel air, melted so that the entire cab interior was dripping with moisture. Shutting off the traction motor blowers or reducing the volume of air used by them in going through the tunnel improved the situation very considerably by reducing the volume of air which had to be drawn into the cab.

By making a further change so that the air from the transformer blowers could be recirculated in the cab, the temperature in the cab, even with below zero weather outside, was readily maintained at about 45 deg. Fahr. This method of operation almost entirely eliminated the depositing of moisture in the cab in going through the tunnel, and entirely eliminated the locomotive troubles.

It is of interest to note that during this period, in spite of these minor difficulties with the electric locomotives in freight service westbound, no serious delays occurred to the movement of freight, although during the greater part of this time the ordinary traffic was very largely augmented because of the detouring over the Great Northern of a considerable amount of traffic from the Canadian Pacific which had had some interruption on its own main line.

* * *

Photo By Atlantic Coast Line

Atlantic Coast Line Passenger Train near Inverness, Fla.

C. & O. May Issue Stock at Par

I. C. C. also authorizes purchase of Pere Marquette stock at $133.33

WASHINGTON, D. C.

MODIFYING its decision of May 8, 1928, the Interstate Commerce Commission, in a supplemental report and order made public on April 6, has granted the application of the Chesapeake & Ohio for authority to issue 300,000 shares of common stock at its par value of $100 a share, thereby capitalizing expenditures heretofore made, to be subscribed for by holders of the present stock in the ratio of one share for each four held, whereas the former order had provided for an issue of 200,000 shares at not less than $150.

At the same time the commission modified its order authorizing acquisition by the C. & O. of control of the Pere Marquette so that the C. & O. may exercise its option to purchase 174,900 shares of Pere Marquette common held by the Nickel Plate at $133.33 a share and may purchase at the same price within one year such additional shares as may be necessary to constitute a numerical majority of the outstanding stock of the Pere Marquette. In the original order the commission fixed a maximum of $110 a share, which was the price fixed in an earlier option which expired on July 1, 1927, shortly following the close of hearings in the case. The proceeds of the stock issue are to be used in purchasing Pere Marquette stock and the report points out that the C. & O. will need about 117,000 additional shares to constitute numerical control. No program has been submitted for this additional acquisition, it says, and if the subsequent prosecution of the plan regarding the Pere Marquette should develop financial or other difficulties of such sufficient magnitude as to cause a revision or abandonment of such plan the responsibility must rest with those in control of the management.

Three commissioners, Eastman, McManamy and Taylor, dissented, and the majority said it was "not much impressed with the advantages described by the applicant of issuing new stock at par rather than at $150 a share." It said, however that it realized "the latitude in action which must be preserved to private management", although declining to agree with the arguments of C. & O. counsel that it had no authority to fix the price at which the stock is to be issued.

Claim Price Not Unreasonable

As to the price to be paid for Pere Marquette common the majority said that "by the usual criteria of value the proposed price is not an unreasonable one" and that it was not disposed to question the judgment of those who fixed it. Pere Marquette common has for some time been quoted in the market at around 160 or higher.

Commissioner Eastman, in his dissenting opinion, took the position that it had not been proved to his satisfaction that unification of the C. & O. and Pere Marquette would be in the public interest and he objected to the transfer of stock from the treasury of one road controlled by the Van Sweringen interests to "another corporate member of the same family", at a book value more than doubled. He also remarked:

The majority refuse to approve the acquisition by the Chesapeake & Ohio of further Pere Marquette stock at a price per share in excess of that which is to be paid to the Nickel Plate for its holdings. But if the Commission pursues its present policy, what is there to prevent the Van Sweringens from purchasing Pere Marquette stock at any price they see fit through the medium of the Allegheny Company, or the Vaness Company, or the Virginia Transportation Company, or some other of the vast throng of their various corporate manifestations, with railroad credit as the basis of the pyramid? We pass upon these various applications for authority to acquire control which are brought to us by the Nickel Plate or the Chesapeake & Ohio, but apart from causing some passing comfort or discomfort to the Van Sweringens I cannot see that our decisions affect the ultimate situation very materially. The process of acquiring control goes steadily on regardless and the same may be said of the process of keeping control.

Extracts from the majority and the dissenting reports are as follows:

The applicant proposes to acquire the Pere Marquette shares held by the Virginia Transportation Company and the Vaness Company pursuant to the terms prescribed in our former report, and such additional shares as are necessary to constitute a numerical majority of the outstanding stock of the Pere Marquette at such price or prices, and on such terms and conditions as the board of directors may from time to time hereafter determine.

Inasmuch as by our former order, 138 I. C. C. 517, we approved, as being in the public interest, the purchase by Chesapeake & Ohio of control of Pere Marquette, the only questions here presented are as to the price at which additional Pere Marquette stock may be purchased and the price at which Chesapeake & Ohio may offer its own stock to its stockholders.

Barring a serious loss of business to the Pere Marquette, a contingency which neither the record nor the business condition of the country suggests, there appears to be no reason to deny the applicant's petition as it relates to the payment of $133.33 per share for the block of Pere Marquette common stock described. By the usual criteria of value, all of which are set forth in the evidence, the proposed price is not an unreasonable one, and we are not disposed to question the judgment of those who fixed it.

The original cost of the 174,900 shares of Pere Marquette common stock to the Nickel Plate was $11,572,623. At the price of $110 per share originally fixed the Nickel Plate's profit would have been approximately $7,886,000, and at the price now proposed it will be approximately $11,747,000.

The holdings of the Virginia Transportation Corporation have, since the time of our former report, been reduced by a net amount of 1,700 shares of Pere Marquette stocks. If the present holdings and those of the Vaness Company are acquired at their original cost, and the 174,900 shares of Pere Marquette common stock are acquired as now proposed from the Nickel Plate, the applicant will have expended approximately $27,250,319 for 226,300 shares of the voting stocks of the Pere Marquette. As the total outstanding stocks of that company aggregate 686,750 shares. the applicant will have obtained slightly less than 33 per cent, and would need about 117,000 additional shares to constitute numerical control. No program has been submitted to us for this further acquisition, and the applicant's plan is apparently no more complete regarding majority control of the Pere Marquette than it was when the case was first presented to us. While the applicant seeks to acquire control of the Pere Marquette by purchasing, in addition to the specific blocks of stock mentioned, such shares as are necessary to constitute a numerical majority of the outstanding stock of the Pere Marquette, the price at which it proposes to acquire such additional shares is not stated, the proposal being to purchase these additional shares at such price as the board of directors may from time to time hereafter determine. Any estimate of the ultimate cost of acquiring such control must necessarily involve assumptions as to the price or prices to be paid for stock purchased in the future. If the average price were as high as $150 per share for the remaining 117,000 odd shares required, the ultimate outlay by the applicant would approximate $44,813,000, and the aggregate amount of new stock which the applicant would have issued

at par for this purpose would be 448,130 shares. This would represent an increase of about 38 per cent in the amount of stock now outstanding. With the advancing market for Pere Marquette common stock, the final cost to the applicant might well be greater than has just been stated.

Before making an order approving and authorizing the acquisition by one carrier of control of another, we are required by the act to find that the consideration, terms, and conditions of acquiring such control are just and reasonable. It is obvious that we are not in a position to make such finding where the consideration, terms, and conditions are not disclosed. We may, however, make a finding as to the specific blocks of stock which the applicant proposes to purchase and as to such additional shares as may be obtained for a definite consideration and upon stated terms and conditions. Under the provisions of our order of May 8, 1928, *supra*, the applicant may acquire control of the Pere Marquette by purchasing, in addition to the stock held by the Virginia Transportation Corporation and the Vaness Company for the considerations there stated, such other Pere Marquette common stock as may be obtainable at a price not to exceed $110 per share and such prior preference and preferred stock as may be obtainable at a price not to exceed $100 per share. We are of the opinion that the facts of record justify such modification of our findings upon which that order was entered, and consequently such modification of that order, as will permit the applicant to purchase at the price proposed the 174,900 shares of Pere Marquette common stock held by the Nickel Plate and to purchase at the same price such additional shares of Pere Marquette common stock as may be necessary to constitute a numerical majority of the outstanding stock of the Pere Marquette. Further than this we are not called upon to go. If the subsequent prosecution of the applicant's plan regarding the Pere Marquette should develop financial or other difficulties of sufficient magnitude to cause a revision or abandonment of such plan the responsibility must rest with those in control of the applicant's management.

The petition in Finance Docket No. 6113 for a modification of our former order with respect to the amount and selling price of additional common stock, proposed to be issued by the applicant, is based upon the contentions that the price of $150 per share fixed by us constitutes an error of law, that the requirement that stock be sold at a premium is a departure from our practice in all other cases where additional issues of stock are involved, that it unjustly discriminates against the applicant, infringes on the right of private management, and is generally unwarranted. The applicant now makes plain that it wishes, in addition to providing funds for the purchase of Pere Marquette stock, to extend to its stockholders whatever benefits may accompany the sale of new stock at par. It claims that the matter of price at which its new stock is to be sold has no connection in principle with the purposes for which such new stock is issued, and should be determined without regard to those purposes.

We need not discuss the question of law raised by the applicant. While we have recognized the right of stockholders to a distribution of corporate profits and to compensation for sacrifices made in the past, we have also pointed out the necessity for authority under section 20a of the act for the issuance of securities, including stock dividends. Our powers are plenary, and we conceive them to extend to jurisdiction over the terms and conditions under which stock may be issued by any carrier subject to the act. With respect to the principle argued for by the applicant that, if its proposed increase of stock is adequately supported by assets, the conditions of issue and sale are matters entirely unaffected by the question of how the proceeds shall be used, we are of opinion that we may exercise our judgment in such a case as the circumstances seem to require. As we stated in our former report, the evident object of the applicant's proposed stock issue was to finance the acquisition of control of the Erie and Pere Marquette.

We are not greatly impressed with the advantages, described by the applicant, of issuing new stock at par rather than at $150 per share. The issue of 300,000 additional shares now proposed will, as has already been shown, provide for less than 33 per cent of control, and it will increase the applicant's outstanding stock by 25 per cent. The resulting dilution of value per share of the applicant's stock would be much further increased if the actual acquisition of majority stock control of the Pere Marquette were to be entirely financed by the issuance of additional stock at par. That the dilution presently to occur is considered a desirable thing by the applicant is shown by the statement made by counsel in the applicant's brief that "the wider distribution of stock by reason of the issuance of 300,000 new shares at par instead of 200,000 new shares at $150 would tend to increase the demand for the shares because the assets would be distributed over a larger number of shares, leaving each share somewhat more in reach of the pocketbook of the average investor." While nothing appears in the testimony as to the applicant's ability to maintain its present dividend rate of 10 per cent per annum, it may be assumed either that there is confidence in such ability or belief in the soundness of increasing the amount of stock outstanding, even though the common stock dividend rate may have to be reduced in consequence. With this policy, as applied to the railroads, we have not been entirely in accord. We realize, however, the latitude in action which must be preserved to private management. A determination of the exact situation in which restrictive regulation in the public interest becomes our duty is frequently complicated by special considerations.

Since the time of the former hearing the applicant's financial position, as shown by the exhibits presented, has changed to a considerable extent. Some of the major features of this change are indicated by the following summary:

Chesapeake and Ohio Lines

	Dec. 31, 1926	Aug. 31, 1928
Total capitalization	$312,170,516	$305,343,916
Total investments	425,713,441	441,663,789
Current assets	29,171,874	37,949,395
Current liabilities	16,420,418	14,143,058
Excess of current assets over current liabilities	12,751,456	23,806,337
Total appropriated surplus	26,485,160	26,707,626
Profit and loss—credit balance	62,670,691	87,169,040
Total corporate surplus	89,155,851	113,876,666

The evidence introduced and the representations made by the applicant permit of no reasonable doubt as to the existence of a sound financial basis for the issuance of $30,000,000 par value of additional stock, and as to the fact that the proportional interests of the stockholders in the property, its assets, and earnings, are unchanged whether 200,000 or 300,000 new shares are distributed. In either case the assets would be increased by the payment of $30,000,000 into the treasury. Under such circumstances our chief concern is with the test of public interest, and with a determination whether the proposed issue is reasonably necessary and appropriate.

It has been shown theoretically that the value of the stock rights to be offered to shareholders is equal to the loss of value in their present holdings in either case. This, of course, tends to remove an objection which may be raised against the larger issue. It is pertinent to consider, however, the probability, as pointed out by Frederick Strauss, the applicant's principal witness at the further hearing, that when rights are offered on terms which represent a considerable value in the market, the price of the stock will tend to rise after the close of the period during which the stockholders have the choice of selling or retaining the new stock. Should the market price in this instance recover its former level, and should the price be $200 per share, as used by counsel in his argument, the value of rights at the stock issue price of $100 would be $24 per share, and at the issue price of $150 would be $10 per share. At a market price of $190, the rights on the $150 basis were computed at approximately $5.71 and on the par basis at $18. It is clear that the proposed issue at par may, within a reasonable probability, yield to present stockholders who sell their rights a money benefit of more than double the amount which would follow from an issue at $150 per share. We can not escape the conclusion that the desire for the larger probable "compensation" to the shareholders is a factor in the applicant's present request. This should, however, not confuse the merits of the case from the public standpoint.

In the light of the further showing made by the applicant and a reconsideration of all the circumstances affecting the case, we are of opinion that our former order, so far as it relates to the issue of stock, should be modified as requested in the applicant's petition.

Eastman, *Commissioner*, dissenting:

Under these circumstances, it is plain that the transfer of a large block of stock from the Nickel Plate to the Chesapeake & Ohio will not change the real situation so far as control of the Pere Marquette is concerned. The Van Sweringens can as easily vote the stock in one place as in the other. All that will be accomplished by this shifting of the stock from one pocket to another is that the Nickel Plate will be able to realize a cash profit of more than 100 per cent at the expense of the Chesapeake & Ohio. Just what public interest will be served by this transaction I am unable to see. If the stock is worth what the Chesapeake & Ohio proposes to pay for it, it will still be worth that amount if it continues to be held by the Nickel Plate. From the standpoint of conservative railroad finance it seems to me that the public interest will be served better if this stock remains in the treasury of the Nickel Plate at a low book value than if it is transferred to another corporate member of the same family at a value more than doubled.

The only theory upon which this transaction might be justified from the standpoint of the public interest is that holding of Pere Marquette stock by the Nickel Plate is inconsistent with that interest and perhaps even unlawful, in view of the fact that the two carriers are in direct competition between Buffalo and Chicago and elsewhere But this situation will not be cured by transfer to the Chesapeake & Ohio so long as that carrier and the Nickel Plate remain under common control. It follows that the stock might better be left where it is, unless the Commission is prepared to take such legal steps as are possible to pry apart the Nickel Plate and the Chesapeake & Ohio. But there is no indication that this is contemplated. Nearly a year ago in the original report in this proceeding, we refused to approve acquisition of control of the Erie by the Chesapeake & Ohio. Yet those two carriers were then under common control, and they still are. . . . Under the circumstances I am somewhat at a loss to know what it is thought will be accomplished in the public interest by this transfer, all within the family, at a huge cash profit.

British Report on Collision at Dinwoodie

THE British Ministry of Transport, immediately following its very detailed study of safety problems in connection with the disastrous collision at Charfield on October 13, 1928, (*Railway Age,* March 16, page 630) has had to deal with another shocking collision which, though not fatal to any passenger, is peculiarly disturbing by reason of its unusual cause—a signalman on an important railway falling asleep at his post. The essential cause was not, of course, the falling asleep; the manual block-signal system, theoretically at least, provides against that; it was the signalman's dishonesty after he had wakened. This report, by Lieutenant Colonel A. H. L. Mount, on a collision near Dinwoodie, says that in October the British railways had to report four fatal passenger train accidents, of which three were due to neglect on the part of signalmen. Dinwoodie is on the main line of the London, Midland & Scottish, from London to Scotland, 31 miles north of Carlisle, England.

The processes followed in the operation of the manual block system in this country are in many respects different from those in vogue in England but the lessons embodied in the British inspector's recommendations in this report are by no means inapplicable to American practice; and they are of value even where the manual system is being supplanted by the automatic.

The collision occurred about 3 a.m. The northbound "Royal Highlander," two locomotives and 12 cars, moving at about a mile a minute, ran into the rear of a standing freight, and both enginemen and both firemen were instantly killed. The coaches, however, were lightly loaded and only five passengers were injured, none seriously. The freight had been stopped two-thirds of a mile beyond Dinwoodie station because a rod connecting with a lubricator pump had become disconnected, making a noise which led the engineman to stop the train. Signalman Scott, at Wamphray, 2¾ miles north of Dinwoodie, fell asleep while the freight was delayed (14 minutes) and when he awoke he *assumed* that the freight had passed his station; and he then gave the proper signal to Dinwoodie for the express to enter the block. Scott was a man of several years' experience and his falling asleep was partly due to his having, on account of sickness of his wife, spent several hours in the daytime attending to household duties.

The inspector concluded that Scott, though he said in his testimony that he must have fallen asleep and "must have slept about 10 minutes," was in the habit of dozing in his chair and depending on the bell signals to awaken him; and he is held primarily responsible for the collision. The inspector quotes his evasive and confused statements and is satisfied of his untruthfulness. He was a trackman—"plate-layer"—in 1918, was in the Army four months and came back to the railway in 1919; and he had a good record except that in 1924 he was suspended a week when he was absent from his post for a considerable time and tried to cover up this delinquency by reporting that the block signal instruments had been out of order. It appears that signalmen work days part of the time and nights part of the time.

Signalman Anderson, at Dinwoodie, is censured for not reporting, from repeated experiences, that he knew or suspected that Scott slept or dozed at his post. Anderson "would have been wise to have taken the unenviable step" of reporting Scott. The report says also that the signalman at Murthat, north of Wamphray, ought to have made inquiry, when the delay of the freight, led or should have led him to suspect that something was the matter with the express.

The report, which fills 26 large pages, devotes four pages (3000 words) to the conduct of the men who should have protected the freight, and five pages to the conduct of the men in the signal cabins, but it reaches about the same conclusions that are familiar to American railroad men in cases of this kind. In reading the report, however, one is reminded of the fact that in English practice the rear trainman is not held to any such continuous and all-inclusive rules as obtain in America.

The British Flagging Rule

Nicholson, the guard of the freight, who did not go back promptly with his red light and torpedoes, is characterized as a man "not of highly strung or quick witted nature," but it is held that he must take some measure of responsibility. He is 48 years old and of 27 years' experience, with a fair record. It appears that in 1923 the former rule, that in case of a stoppage of this kind the guard must go back immediately, was changed to provide that his first duty would be to find out if the adjacent track was obstructed (necessitating the sending of a flag ahead) and secondly, to find out, as speedily as possible, how to obtain assistance if necessary; and then thirdly, to proceed to the rear with torpedoes.

In the final summary, Colonel Mount names, first, the error of judgment of the man who left the lubricator connection on the locomotive in a condition to easily fail; second, the lack of zeal and celerity on the part of Nicholson, and third, the gross negligence of Scott. As before stated, the signalmen to the south and the north might have been more thoughtful.

The inspector recommends the installation of the latest three-position, three-wire block signal apparatus, although the apparatus that was in use was not a factor contributing to the signalman's failure in this case. Secondly, that when, in a case like this, the engineman knows that the adjacent track is not obstructed the fireman should at once proceed to the rear, to meet the guard; thirdly, he holds that continuous track circuiting or continuous inductive automatic train control are too costly to contemplate at present. The standard minimum charge of explosive in torpedoes ought to be made larger. Further consideration should be given to the practicability of providing flares, for use only in the last emergency.

One of the "Flying Fleet" of Car Repair Trucks in Action

Reducing Transfers to the Vanishing Point

Chicago terminal lines of the New York Central secure results by organization to combat claims

By E. M. Wilcox
Master Car Builder, Indiana Harbor Belt and Chicago Junction

THE Chicago district is served by three terminal subsidiaries of the New York Central, namely: the Indiana Harbor Belt, the Chicago Junction and the Chicago River & Indiana. During 1928, industries along these three lines loaded out 521,945 cars, an average of 43,495 per month. Despite this heavy business it was necessary to transfer the lading on only 23 of these cars during the entire year. All of these transfers occurred during the first five months of 1928, and, during the last seven months, not a single car was transferred. In 1927, 465,396 cars were loaded out of industries along our lines, of which it was necessary to transfer only 43.

In all, our lines handled 4,208,739 cars in interchange during 1927, and 4,538,612 cars in 1928. The effect of careful and consistent campaigns to avoid rough handling transfers and improper loading is indicated by the accompanying table. This shows that, in 1928, a total of $1,191 was paid out, chargeable to defective equipment as compared with $3,852 in 1927, a decrease of $2,661, or 69 per cent. During the two months of 1928, April and July, it was not necessary to pay out anything because of defective equipment.

Amounts Paid, Chargeable to Defective Equipment

Car Movement	1928	1927	Decrease
Railway to industry	$120.29	$1,530.31	$1,410.02
Industry to railway	617.69	782.92	165.23
Industry to industry	105.41	235.06	129.65
Railway to railway	347.89	1,304.28	956.39
Total	$1,191.28	$3,852.57	$2,661.29

Co-Operation Pays Dividends

This success cannot be attributed to any one department. It was brought about by increased co-operation between all departments. This co-operation has been fostered to a large extent by committee organization, which has brought together supervisors and employees of all departments to permit a free interchange of ideas and a closer mutual acquaintanceship. The organization for efficiency consists of five committees, as follows:

Loss and damage
Safety
Suggestion
Conservation
Purchases

These committees meet regularly and are given the benefit of a progressive educational campaign, which consists of studying the modern trends in car handling, as outlined by the Car Service Division of the American Railway Association, and other sources. In addition, stress is laid on specific cases of error, each of which is examined, discussed and a remedy suggested.

Car Department Activities

The operating department has organized and conducted educational campaigns, pointing out the false

economy of speed in switching, at the sacrifice of damage to equipment and contents. Special switching instructors have also been employed to train men in safe methods of car handling.

The unified campaign for the retirement of the low capacity wooden equipment or that equipped with light steel underframes, is progressing rapidly. As a result, thousands of cars which have previously caused anxiety from a safety standpoint by reason of their weakened condition, have been replaced by modern equipment.

The effect of this and other measures is readily apparent in the Chicago switching district, where over ten million cars are interchanged each year. Previously, it was found necessary to transfer from 10,000 to 11,000 of these cars annually, whereas, in the last few years, this number has been reduced approximately ninety per cent and now amounts to only about one thousand cars per year.

Reducing Outbound Transfers

To take full advantage of this condition the C. J., the C. R. & I., and the I. H. B. have trained an efficient corps of car inspectors. All of the inspectors are thoroughly qualified, some of them being former rip-track foremen, and all having had not less than 10 years seniority.

The clean record of no cars loaded out from industries being transferred during the last seven months of 1928 is largely attributable to the vigilance of these men. A system of pre-inspection has been built up that practically insures that all cars spotted for loading at industries shall be in first-class condition for the lading they are to carry.

The terminal has been subdivided into certain switching and loading areas and an inspector is assigned to each of these. The duties of these men have been considerably simplified by the co-operation of the car service department. The available empties are carefully assigned to industries, in accordance with the condition of the car and the class of commodity to be loaded. It was formerly the practice to return to connecting lines all cars supplied on orders that were not deemed fit for the commodity to be loaded, even though the car might be fit for other loading. This necessitated an abnormal amount of switching, which has been materially reduced by assigning such equipment to industries whose shipments can be handled in the cars in question. Similarly, many cars previously routed home empty, are now intercepted, cleaned and loaded in the direction of the return movement, thereby eliminating the necessity for delivering an order car and the consequent expense involved in road haul and switching charges.

The inspectors on duty in the various switching areas give each car assigned to a shipper in their territory a thorough inspection before it is spotted. Loaded cars delivered to industries are not permitted to be reloaded until they are gone over by an inspector.

An automobile truck is maintained by the car department, manned by an experienced crew, to go to various siding where cars with minor defects are spotted and make the repairs before the car is loaded. This has been found to be much more efficient than waiting until the car is loaded before making repairs, or switching the defective empty out and switching in another car. There are many advantages from the use of this flying crew of car repairers. Take the case of the common defect of loose or missing grab-iron bolts, or defects in the grab-iron itself. The flying crew goes to the siding where the car is spotted empty and repairs the defect in a few minutes while if the car was loaded out with this safety defect existing, it would have to be repaired under load before being interchanged. Thus a simple job would be turned into a complex and expensive one, since, to repair or replace a grab-iron, it is, in most instances necessary to get into the car, and, if it is under load, to shift the load away from the grab-iron bolts.

Another use to which these trucks are assigned is the re-railing of cars in the various yards and on the main line of the territories over which they have jurisdiction. A great deal of expense has been eliminated through their use as heretofore it was necessary to use either the steam derrick or the hand derrick in which event an engine crew was obliged to accompany the outfit.

Three of these trucks are operated in the Chicago terminal district, manned by three men each. One covers the five square miles of industrial territory served by the Chicago Junction, the other two being assigned to the Indiana Harbor Belt. One of these covers the territory north of Blue Island yard, the other operates east and south of the yard.

Sufficient work develops in the way of car repairs and wrecking jobs to operate these trucks in three shifts and they are kept busy practically 24 hr. every day.

Co-Operation with Shippers

The car department co-operates whole-heartedly with the shippers and the car inspectors keep in touch with their wants and needs. The type of commodity loaded by each shipper is studied carefully, and much damage is avoided in this manner. In one case, for example, the shipper loads out carloads of freshly roasted coffee beans, which are still warm when shipped. It was found that, in cold weather cars with metal roofs should not be used for this commodity, since these roofs cause moisture in the air to condense and drip down on the lading, resulting in damage.

In another case, some shippers of sugar, in sacks, required door slabs. It was found that the friction of the sacks against the square-cornered door slabs soon wore holes in the sacks, with consequent leakage and damage claims. To counteract this, the door slabs in cars supplied to this shipper are now bevelled and the damage has ceased.

Instances of this nature might be multiplied almost indefinitely, but the performance in 1928 supplies an excellent commentary on what may be done, first by education, and second by co-operation, not only between all departments, but with the shippers as well.

* * *

Florida East Coast Photo

Florida East Coast Station at Titusville, Fla.

Southern Pacific 1928 Gross a Record

Earnings equivalent to 10.71 per cent on stock but return on investment is only 3.76 per cent—Corporate surplus one-half billion

THE Southern Pacific Lines in 1928 had operating revenues of $300,104,027, an increase of 0.79 per cent over the preceding year, and the largest in the history of the company. Operating expenses declined 0.66 per cent and operating net totaled 4.78 per cent more than in the preceding year. Net railway operating income was $54,908,101—an increase of 6.4 per cent over 1927. Non-operating income increased 20.29 per cent to a total of $13,300,658 (due largely to increased dividends received from stock holdings in the Pacific Fruit Express Company and the Standard Oil Company of California). Gross income was $68,208,759—8.85 per cent higher than in 1927—and net income was $39,028,633, or 15.8 per cent above that of 1927.

Earnings on Investment Low

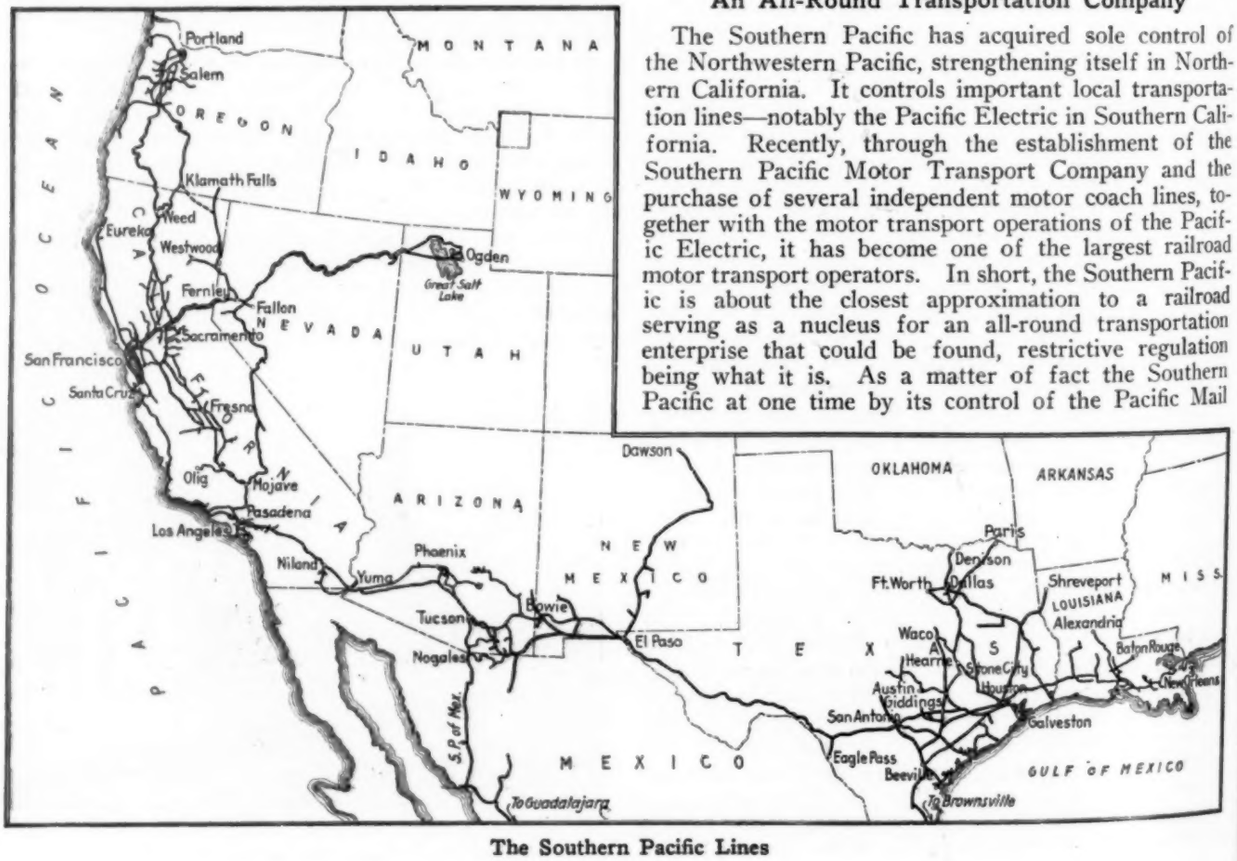
The company carried $37,452,900 to the credit of profit and loss and the credit balance in the surplus account rose from $480,186,890 at the end of 1927 to $504,124,008 at the end of 1928 after the payment of the regular 6 per cent dividends. It is this enormous corporate surplus which explains the company's balance over dividends. The ratio of net railway operating income to the investment in road and equipment was only 3.76 per cent. The earnings on the investment of this great company have, since federal control, exceeded 4 per cent in only two years and the average for the entire period 1921-28 is but 3.98 per cent.

If it were not for the tremendous equity which Southern Pacific stockholders have in the property which is not covered by interest-bearing securities, the earnings of the outstanding stock (10.71 per cent in 1928) would be less than half what they now are. The corporate surplus exceeds by more than 20 per cent the outstanding stock in the hands of the public.

The Southern Pacific operates one of the most diversified transportation enterprises on the North American continent. It serves the West Coast and is an active participant in the railroad expansion taking place in Northern California and Oregon. Through its connections via its line to Ogden and the El Paso & South Western it forms a connecting link in important through routes between the East and the West and provides one entirely over its own rails along the Mexican border and the Texas and Louisiana gulf shore to New Orleans. With its steamship line from New Orleans to New York it provides transportation service to the Atlantic seaboard. Its recently completed Mexican line, the operation of which is now unfortunately hampered by the rebellion, provides a new direct route between the West Coast of the United States down the West Coast of Mexico into Mexico City.

An All-Round Transportation Company

The Southern Pacific has acquired sole control of the Northwestern Pacific, strengthening itself in Northern California. It controls important local transportation lines—notably the Pacific Electric in Southern California. Recently, through the establishment of the Southern Pacific Motor Transport Company and the purchase of several independent motor coach lines, together with the motor transport operations of the Pacific Electric, it has become one of the largest railroad motor transport operators. In short, the Southern Pacific is about the closest approximation to a railroad serving as a nucleus for an all-round transportation enterprise that could be found, restrictive regulation being what it is. As a matter of fact the Southern Pacific at one time by its control of the Pacific Mail



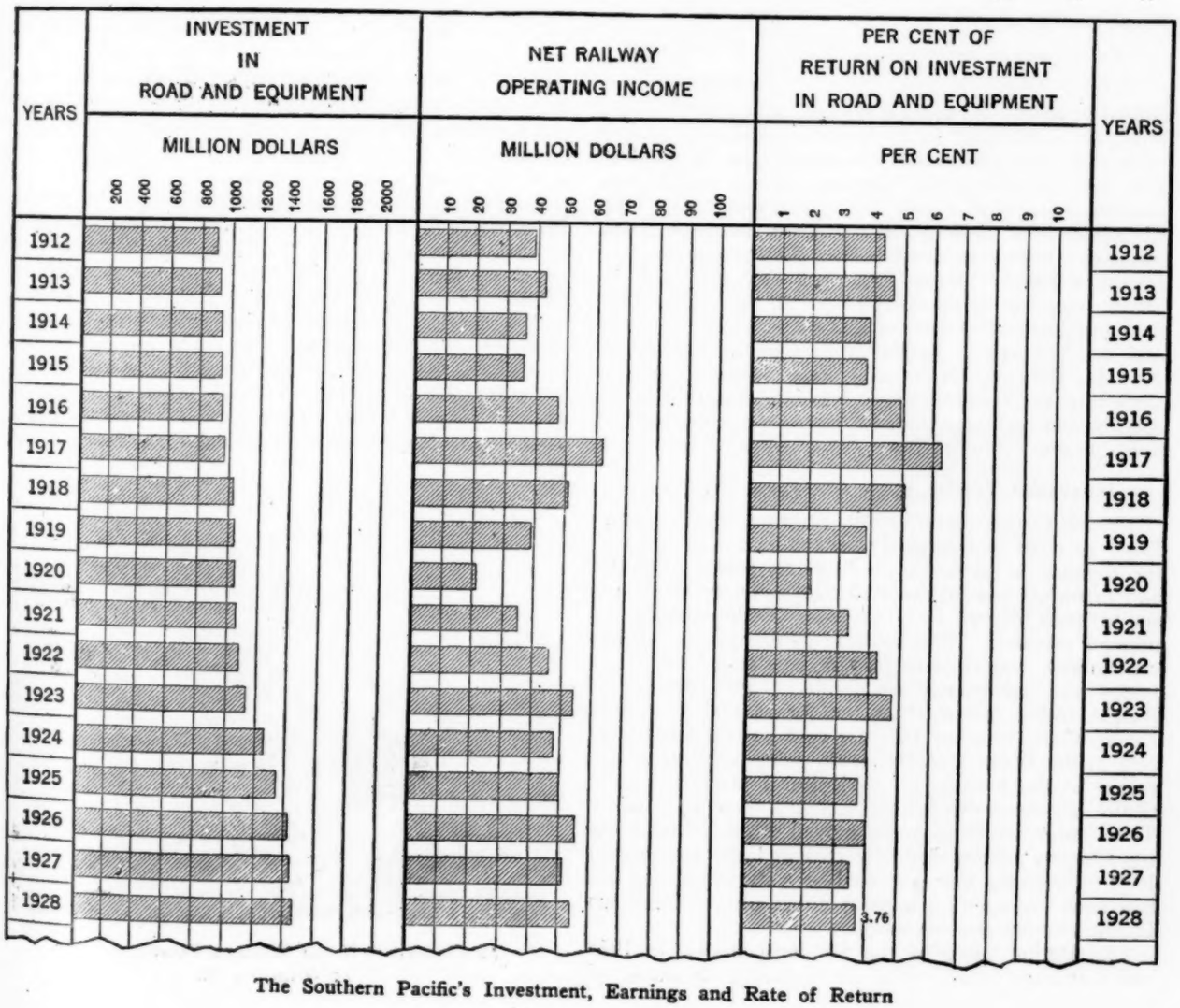
The Southern Pacific Lines

Steamship Company was prepared to operate steamships through the Panama canal, until it was forced by the Panama Canal Act to relinquish its interest in this enterprise.

The wide diversity of the territory the company serves, with one point on its line below sea level and another at an altitude of 8,000 feet, with some lines serving densely populated areas and others crossing deserts, some lines having a dense traffic and others being largely developmental of virgin territory, with a wide variety of traffic and its lines making up or forming parts of a multitude of traffic routes—with such varied conditions it is difficult to gage by the published statistics the effect of this or that improvement or operating economy. Bearing this in mind, it will, nevertheless, be observed from the comparative freight service operating statistics shown in Table I that the Pacific lines in 1928 performed 5.5 per cent more gross ton-miles than in 1927 and did so with an increase of but 0.6 per cent in freight train-hours; that train speed in-

Table I—Comparison of Selected Freight Operating Statistics—Southern Pacific Lines

	Pacific Lines				Texas & New Orleans			
	1928	1927	Per cent of change Inc.	Dec.	1928	1927	Per cent of change Inc.	Dec.
Mileage operated	8,742	8,730		0.1	4,677	4,554	2.7	
Gross ton-miles (thousands)	36,736,421	34,812,462	5.5		11,648,625	11,647,564	..	..
Net ton-miles (thousands)	13,368,425	12,774,342	4.7		4,652,496	4,774,962		2.6
Freight train-miles (thousands)	19,454	18,702	4.0		9,242	8,972	3.0	
Freight locomotive-miles (thousands)	24,047	23,236	3.5		9,308	9,038	3.0	
Freight car-miles (thousands)	955,385	903,615	5.7		307,159	305,159	0.7	
Freight train-hours	1,521,989	1,510,788	0.6		635,419	646,323		1.7
Car-miles per day	39.2	39.0	0.5		31.3	30.8	1.6	
Net tons per loaded car	22.2	22.4		0.9	23.1	24.3		4.9
Per cent loaded to total car-miles	63.1	63.1	..	..	65.5	64.5	1.6	
Net ton-miles per car day	549	551		0.4	474	482		1.7
Freight cars per train	50.1	49.3	1.6		34.2	35.0		2.3
Gross tons per train	1,888	1,861	1.5		1,260	1,298		2.9
Net tons per train	687	683	0.6		503	532		5.5
Train speed, miles per train hour	12.8	12.4	3.2		14.5	13.9	4.3	
Gross ton-miles per train-hour	24,137	23,043	4.7		18,332	18,021	1.6	
Net ton-miles per train-hour	8,784	8,455	3.9		7,332	7,388		0.8
Lb. coal per 1,000 gross ton-miles	121	124		2.4	103	107		3.7
Loco. miles per loco. day	70.6	67.7	4.3		75.7	78.7		3.8
Per cent freight locos. unserviceable	21.7	22.9		5.3	19.9	18.4	8.1	
Per cent freight cars unserviceable	5.9	5.5	7.3		5.4	5.4	..	..



The Southern Pacific's Investment, Earnings and Rate of Return

creased 3.2 per cent and gross ton-miles per train-hour 4.7 per cent, with a 2.4 per cent improvement in fuel efficiency. Similar figures for the Texas & New Orleans, shown in the same table, do not evidence improvement in the same degree, due probably to the taking over additional mileage of lines of less traffic volume than the system average. Nevertheless the T. & N. O. also showed substantial improvement in several of the indices—notably a decrease in train-hours for an equal total of gross ton-miles, an increase in train speed and an increase in fuel efficiency.

Meeting the Passenger Traffic Problem

Total operating revenues for the system, $300,104,027, were the largest in the company's history, exceeding the previous high record of 1926 by more than one million dollars. The increase in freight revenue over 32.7 The Texas & New Orleans showed an average of 37.3 for this ratio. The lines as a whole in 1928 (authoritative figures for the two parts of the system separately not being as yet available) showed a decrease in transportation expenses of 0.3 per cent, which fact, combined with increased operating revenues, should bring about a material reduction in this important index of operating efficiency. Maintenance of equipment expenses in 1928 for the system as a whole increased 1.86 per cent, or in less proportion than the increase in traffic, while maintenance of way expenses decreased 5.4 per cent. This decrease was brought about in part by the completion early in the year of heavy maintenance programs initiated in 1926.

The increase in the investment in road and equipment during 1928 was $25,446,588, which compares with $32,242,901 in 1927, $58,788,355 in 1926, $83,033,763 in

Table II—Southern Pacific Operating Results, Selected Items, 1916 to 1928

Year	Average mileage operated	Revenue ton miles Thousands	Revenue passenger miles Thousands	Rev. per ton mile, cents	Total operating revenues	Total operating expenses	Net operating revenues	Operating ratio	Net railway operating income	Net after charges	Net increase in investment in road and equipment
1916....	11,101	10,779,071	1,643,270	0.959	163,427,423	103,088,737	60,338,687	63.08	47,000,000	35,422,514	.....
1917....	11,137	13,419,091	2,024,391	0.923	193,971,490	120,601,823	73,369,667	62.18	62,000,000	49,129,417	30,197,564
1918....	11,102	12,765,384	2,217,532	1.113	221,611,206	162,722,372	58,888,834	73.43	51,000,000	28,684,916	14,713,564
1919....	11,043	11,933,299	2,379,026	1.286	239,657,272	188,385,172	51,272,100	78.61	39,677,068	31,548,607	10,726,144
1920....	11,151	12,951,778	2,407,400	1.364	282,269,504	242,113,790	40,155,714	85.77	21,312,344	32,070,275	15,661,012
1921....	11,188	10,079,305	1,823,478	1.704	269,494,365	212,572,263	56,922,103	78.88	35,946,791	30,618,778	32,800,834
1922....	11,224	10,837,265	1,812,335	1.563	262,519,170	193,664,456	68,854,713	73.77	46,222,846	32,600,150	8,984,749
1923....	11,232	13,000,879	1,946,416	1.437	287,204,635	207,166,588	80,038,047	72.13	54,228,023	44,552,482	51,471,243
1924....	11,476	13,132,847	1,841,391	1.397	275,904,111	203,051,329	72,852,782	73.59	48,101,416	35,754,416	141,868,180
1925....	12,950	14,581,435	1,858,622	1.382	293,074,553	215,609,318	77,465,235	73.57	50,313,759	37,916,317	83,033,192
1926....	13,280	14,724,693	1,837,935	1.401	298,800,998	215,595,480	83,205,518	72.15	55,796,718	42,034,665	58,788,356
1927....	13,504	15,133,358	1,805,706	1.368	297,745,406	218,179,192	79,566,213	73.28	51,604,068	35,999,196	32,242,901
1928....	13,599	15,695,443	1,737,915	1.358	300,104,027	216,734,202	83,369,824	72.22	54,908,101	39,876,657	25,446,588

Standard return for operation during federal control, $48,167,343.

1927 was nearly six million dollars, which was in part offset by a decrease in passenger revenues of almost three million dollars. In commenting upon the passenger traffic situation, the company points out that its revenue from this source has steadily declined from 62 millions in 1923 to 50.3 millions in 1928. The company's answer to this has been the formation of the Southern Pacific Motor Transport Company and the active extension of its operations. At the end of 1928 this company had a total of 222 motor coaches, trucks and service cars in operation in Oregon, California, Nevada, Arizona, Texas and New Mexico. At the same time the Pacific Electric was operating 114 motor coaches and had inaugurated a store-door collection and delivery service in territory served by its lines.

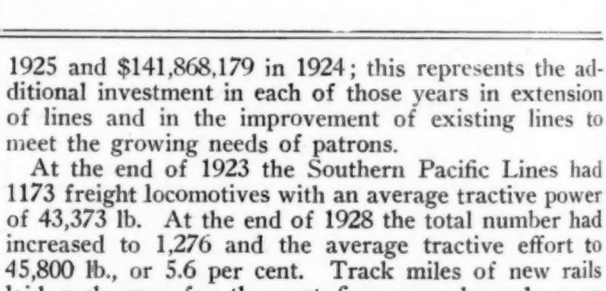
Increased Traffic in Agricultural Products

The increase in freight traffic revenues on the Pacific Lines in 1928 was largely attributable to increases in the tonnage of agricultural products, forest products, and manufactures and miscellaneous commodities, offset to some degree by a decrease in the tonnage of mineral products. The increase in tonnage of apples, canteloupes, watermelons, sugar beets and fresh vegetables was particularly noticeable. The increase in freight traffic revenues on the Texas and Louisiana Lines, which was but 1.26 per cent as compared with 3.53 in the West, was the result, principally, of an increase in the tonnage of agricultural products—practically all items showing increases except bananas. These latter, which formerly moved through Gulf ports for western points, were diverted in large measure in 1928 through the Panama canal—a waterway which has had since its opening a great effect on the Southern Pacific's traffic and revenues.

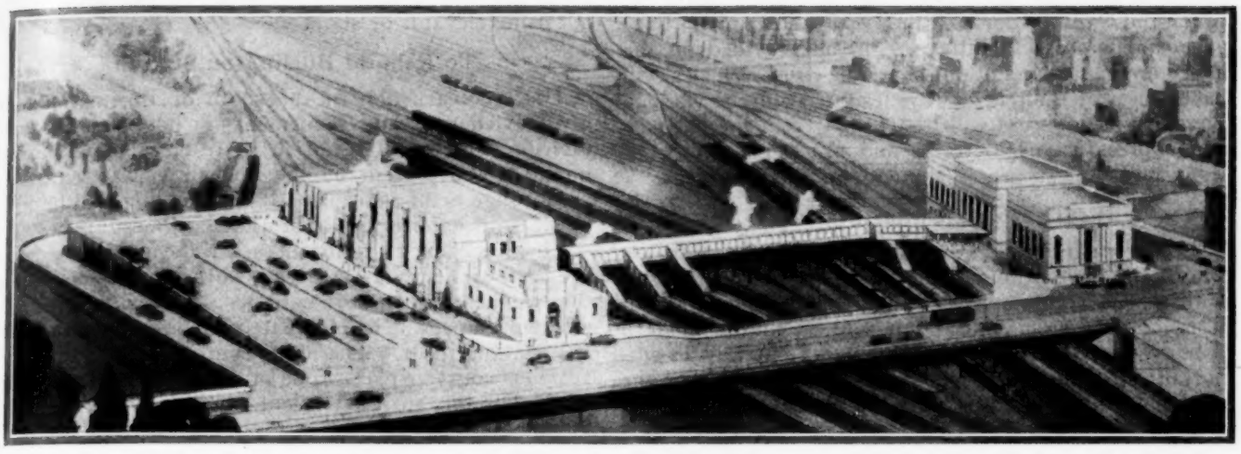
The Pacific Lines of the Southern Pacific in 1927 had a transportation ratio (to operating revenues) of 1925 and $141,868,179 in 1924; this represents the additional investment in each of those years in extension of lines and in the improvement of existing lines to meet the growing needs of patrons.

At the end of 1923 the Southern Pacific Lines had 1173 freight locomotives with an average tractive power of 43,373 lb. At the end of 1928 the total number had increased to 1,276 and the average tractive effort to 45,800 lb., or 5.6 per cent. Track miles of new rails laid each year for the past five years have been as follows: 349, 510, 536 and 507. The number of ties renewed per mile in the same period were as follows: 252, 248, 225 and 214. A program was adopted in 1928 for completion in 1930 which will provide all main lines of the Pacific system with automatic block signal protection.

* * *



A Chicago & North Western Passenger Train at Wilmette, Ill.



Artist's Perspective of the Proposed Station Arrangement Looking Toward the South East Across Tenth Street

To Build New Stations at Omaha

Plan provides for ingenious co-ordination of Union Pacific and Burlington facilities

AN unusual combination of passenger stations has been planned for the railroads at Omaha, Neb., through the collaboration of the Union Pacific and the Chicago, Burlington & Quincy, which own and operate the adjoining Union and Burlington stations at that place. When the improvements authorized have been completed at a cost of $4,200,000, the railroads operating passenger trains into Omaha will be served by an arrangement of stations which will afford practically all the convenience of a common station; yet there will actually be two stations as at present.

The Union Pacific will build an entirely new station on the site of the present station at a cost of $3,500,000, while the Burlington will remodel its station at a cost of $700,000 to provide greater capacity and improved convenience and to meet the requirements of unified operation of the two. The Union station will accommodate the trains of the Union Pacific, the Chicago & North Western, the Chicago, Milwaukee, St. Paul & Pacific, the Chicago, Rock Island & Pacific, the Illinois Central, the Missouri Pacific and the Wabash. The Burlington station, in addition to serving the trains of that road, will also accommodate those of the Chicago Great Western.

Will Replace Existing Facilities

The existing stations of the Union Pacific and the Burlington occupy a valley extending across the city in a generally east and west direction, which is crossed by the viaducts of a number of north and south streets. The two stations are located about a half mile from the Missouri river on the east side of Tenth street which crosses over the railway tracks that occupy the space between the two stations. Trains approach both stations from both the east and the west, those entering the Union station from the east reaching it via the Union Pacific bridge which is used also by certain Burlington trains, although the track layouts of the two stations are essentially independent.

Access to the city streets from both stations is afforded by entrances at the level of the Tenth street viaduct and in the case of the Union station, this entrance serves purely as the means of access to a stairway and an elevator connecting with the track level, since all station facilities are on the level of the tracks. In the Burlington station, on the other hand, the facilities are divided between the two levels, with stairways leading from a second floor waiting room to a concourse on the floor below. Therefore, as both stations are of the through type, passengers are compelled to cross tracks to enter or leave trains on any track except the one nearest the station building, and as in neither station are the tracks of sufficient length to permit trains to be spotted entirely east or west of the axis of the station, it is necessary to cut nearly all long trains in two while in the station. There are nine station tracks at the Union Station and three at the Burlington station.

Adopt the Two-Level Plan

The general scheme for the improvements embodies a considerable increase in the trackage, although without any drastic change from the present arrangement. The Union station tracks will be increased in both number and length. There will be 16 tracks instead of 9, with a total track length served by platforms of 14,000 ft. instead of 4,350 ft. as at present. The Burlington unit will have 6 passenger tracks instead of 3 and these 6 tracks will accommodate from 16 to 22 cars each. Other improvements in the trackage will include provision for a four-track lead instead of one of two tracks at the east end of the Union station tracks, and a relocation of tracks west of the station to eliminate a curve in the tracks of the present layout.

To serve these tracks effectively, the station layout will be changed from the one level to the two-level plan, with all facilities provided for the convenience of passengers on an upper level with direct access from the Tenth street viaduct. Connecting this upper level of the two stations, there will be a concourse extending over the tracks, with stairways leading to each track

platform and also providing direct communication between the waiting rooms of the two station units. Baggage and express facilities are to be provided on the lower level in each station, to which street vehicles will have access by ramp driveways leading from the viaduct. Baggage and express will be trucked from the baggage and express rooms to trains and vice-versa over runways across the tracks at the ends of the platforms.

The New Union Station

The new Union Station building, to be built on the site of the old station, will be of fireproof construction with a steel frame and faced with light colored glazed terra cotta. Architecturally it will be in the modern American style now being used so extensively in important structures throughout the country. All of the station facilities to be used by the public will be on the level of the Tenth Street viaduct. The main feature is a waiting room 76 ft. by 160 ft. in plan and 40 ft. high, or 80 per cent larger than the present waiting room. Along the north side, with a partition extending only part way to the ceiling, will be a ticket office, and opening off the waiting room will be a commodious rest room and toilet facilities for women and a large smoking room and toilet facilities for men.

Ample provision will be made for checking baggage and parcels. A large dining room and a lunch room with the necessary kitchen facilities, a barber shop, a small emergency hospital and the usual incidental facilities, including telegraph and telephone arrangements, information and taxicab stations, a news stand and a stationmaster's office also will be on this level.

Convenient arrangements have been made for passengers to arrive at and leave the station by automobile and taxicab. A large plaza is to be constructed just north of the building on the Tenth Street level which will permit motor cars and cabs to drive up to either of the two main groups of doors to the building, one of them to serve as an entrance and the other as an exit. On leaving the doors, the vehicle can turn back to the viaduct on a continuation of the same drive, or it can turn farther to the north into parking space to be provided on the plaza. There will be room in this space for 110 automobiles and taxicabs. Pedestrians and those using the street cars will enter and leave the station on the Tenth Street side as at present, and will pass from the waiting room to the street or vice-versa without using elevator or stairs.

To Rebuild Burlington Station

The reconstruction of the south or Burlington unit involves changes and refinements in both exterior and interior, which will result in a structure more imposing than the present building, when viewed either at close range or at a distance. The building will be fireproof with exterior walls of Indiana limestone.

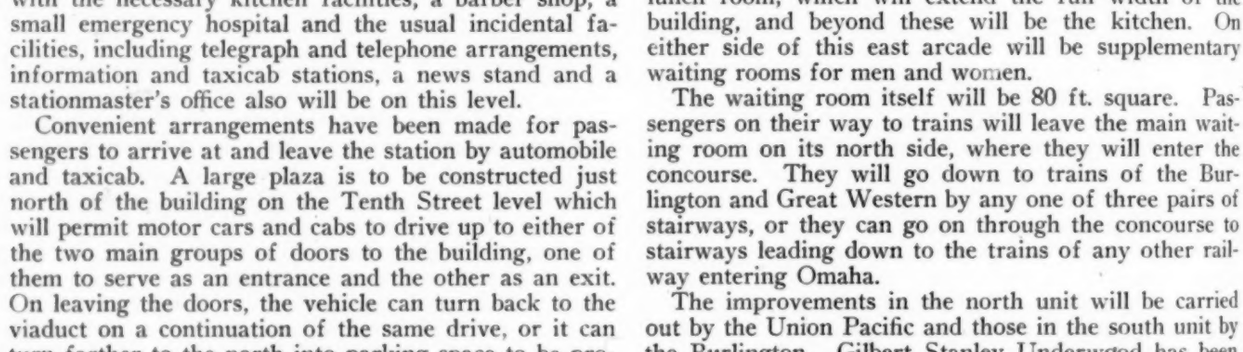
There will be two entrances for the public, both on the level of Tenth street. One will be in the same location as the present west entrance. The pillars on this side will, however, be eliminated, making more room in the station itself. The other entrance will be on a spacious court or plaza to be provided on the north side of the building for the efficient handling of taxicabs and automobiles by means of a circular drive, edged all around by a walk upon which passengers can be discharged or from which they can be received at any point on the circle.

Between Tenth street and the main waiting room will be a spacious arcade, flanked on the north by a baggage-checking room, a parcel-room and a news stand, and on the south side by the stationmaster's office and the ticket office. At the opposite side of the waiting room, a similar arcade will lead to the dining room and lunch room, which will extend the full width of the building, and beyond these will be the kitchen. On either side of this east arcade will be supplementary waiting rooms for men and women.

The waiting room itself will be 80 ft. square. Passengers on their way to trains will leave the main waiting room on its north side, where they will enter the concourse. They will go down to trains of the Burlington and Great Western by any one of three pairs of stairways, or they can go on through the concourse to stairways leading down to the trains of any other railway entering Omaha.

The improvements in the north unit will be carried out by the Union Pacific and those in the south unit by the Burlington. Gilbert Stanley Underwood has been retained as the architect for the new north station and Graham, Anderson, Probst & White as the architects for the rebuilding of the Burlington station. The work will be carried out without interference with traffic.

* * * *



Underwood & Underwood

King George's Own Railway Station at Wolferson, on the Royal Estate at Sandringham

The crown and royal coat of arms surmount the station lamps and a suite of rooms is in reserve for the royal family of Great Britain at all times.

Communications and Books

Ballyhoo—Everyone Else Uses It, Why Not the Railroads?

SEATTLE, WASH.

TO THE EDITOR:

Recently I had occasion to take a short trip on the train, a distance of about 60 miles. On my way to the station I passed the Union motor bus station just as the crowd for my destination was embarking. Four large buses were filled to capacity—making a total of about one hundred passengers. About ten minutes later I boarded the train for this destination. I counted the number of passengers. There were twelve. When the conductor came through I noticed that at least five of these were riding on passes.

This set me to thinking. What is wrong with the short-haul passenger business of the railroads? These local passenger trains are becoming a liability on runs where the bus companies are earning huge dividends. After considering the matter I have concluded that the answer is two-fold.

The public has ceased to be railroad-minded and the railroads have as a whole almost given up the fight before starting it. The average person, nowadays, thinks *bus* when he thinks *trip*. He is used to traveling by highway; he constantly sees the buses; and besides he can travel more cheaply that way. This is the situation that the railroad must overcome.

The salvation of this business does not lie in pulling off trains and reducing service. A few high-powered salesmen and a little money spent could put most of this revenue back into the hands of the railroads.

Every other business uses "ballyhoo," why not the railroads?

First of all I would let the people know that the railroads were still on earth and doing business—passenger business—short-haul passenger business too! I would advertise by billboard, radio and newspaper. I would see that everytime I made an improvement in service people would know about it even if I had to send a brass band to attract their attention; and I *would* improve the service. I would see that the train made better time than the bus or I would smash a lot of records trying it. I would make the trains such that people would want to ride in them—day coaches, I mean. I would make every day coach a chair car and reduce the fare to the same level as the bus. Or better than that, I would carry a coach to fit the pocket book! The train runs anyway, whether it is full or empty.

Put on an ordinary coach at a rate less than the bus fare. Put on another with a few more luxuries and comforts at about the usual rates as at present in relation to the bus fares and, if it is not too much, put on the de luxe car, for those who can afford it, at about the present chair car rates. The reductions of fares cannot greatly injure the income, for the people who pay railroad fare now, when bus fares are so much lower, are the ones who can afford the better service.

I would see that propaganda was started to the effect that the bus was for the transportation of those who could not afford the train. Whether this is true with all bus riders, it is true with most of them and I would not be slow to take advantage of the psychological effect that such a notion would have upon the average person. I would recognize the competition of the bus and I would go out and meet it.

No bus on earth can ride as comfortably and as safely as a train—and I would broadcast that too!

I would co-operate with the other railroad lines, if they were willing, to make the public railroad-minded as they were once. I would put on railroad shows, just like auto shows and invite the public to see the latest luxuries and the newest equipment. I would put the biggest steam and electric locomotives on display. I would exhibit the working of the block system and the train control system. In other words, I would make people interested in railroads and railroading. I would give the impression that riding on a railroad train was an experience of pleasure and not a prosaic thing like a street car ride.

The steamships long ago adopted the policy of making even their ordinary accommodations seem luxurious. Yes, and the buses have taken the same tack. Look at any bus advertisement, "de luxe buses," "luxurious motor coaches" etc.

With most buses the luxury is all in the exterior appearance and I cannot believe that people really prefer them to trains because of their real merits, but rather because of this type of advertising. An interior decorator of the right ability could do wonders with the inside of the average day coach, at little expense. A few drape curtains would give it the appearance of a palace.

With a little radicalism in operation and a lot of good common sense there is no reason why the railroads could not back the motor buses completely off of the map in not only the long haul trade but the short hauls as well.

LYLE L. IVERSEN

New Book

Automatic Train Control, bulletin No. 2 and bulletin No. 3, 109 and 61 pages respectively, 6 in. by 9 in. Bound in paper. Published by G. E. Ellis, secretary of the Committee on Automatic Train Control, American Railway Association, Transportation building, Washington, D. C. Price to employees of railroads which are members of the American Railway Association, bulletin No. 2, 35 cents, bulletin No. 3, 25 cents; to others, bulletin No. 2, 70 cents and bulletin No. 3, 50 cents.

The Committee on Automatic Train Control of the American Railway Association is preparing a series of bulletins describing the principal systems of train control now in service on American railroads. The series will comprise nine bulletins when completed, totaling 350 or 400 pages. Bulletins No. 2 and No. 3 are now ready for distribution. Bulletin No. 2, containing 109 pages, deals with the intermittent inductive train stop system as manufactured by the General Railway Signal Company, followed by an explanation of the use of this system on 12 roads. Bulletin No. 3 containing 61 pages, is devoted to the intermittent train stop system as manufactured by the Union Switch & Signal Company, and explains its application on the several roads using this type. These bulletins are well illustrated with reproductions of circuit diagrams and photographs, and the text not only goes into full detail, but is also presented in a manner that can be understood readily.

Bulletin No. 1, dealing with the history of train control orders of the Interstate Commerce Commission, and other general information concerning the subject, is now under preparation. Each of the remaining bulletins will be devoted to a description of one of the principal systems of train control, giving in detail, with diagrams and illustrations, an explanation of the operation and application of this particular system. In addition, the installation on each particular road using this system of train control will be described briefly, explaining any special features in connection with the construction or operation.

The other bulletins are in the course of preparation and will be issued from time to time. This set of bulletins, when finished, will be the most complete and up-to-date information on the subject of train control. Mr. Ellis has been a student of train control for years and, as secretary of the A.R.A. committee, has personally attended the numerous hearings and conferences before the Interstate Commerce Commission on this subject. Likewise, he has had a part in the inspections of installations made by representatives of the commission. He is, therefore, well prepared to compile the information contained in the bulletins, and has received the co-operation of the manufacturers and railroads in making the data complete and up-to-date. The booklets will be a valuable addition to the library of any one interested in the subject.

J. H. D.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Automatic Train Control Bulletins Nos. 2 and 3, by Committee on Automatic Train Control, American Railway Association. No. 2 describes and illustrates the intermittent inductive train stop of the General Railway Signal Co. No. 3 describes and illustrates the intermittent inductive train stop of the Union Switch and Signal Co. 109 and 61 p. respectively. Pub. by Committee on Automatic Train Control, American Railway Association, Washington, D. C. No. 2, 35 cents to members, 70 cents to non-members of the A.R.A. No. 3, 25 cents to members, 50 cents to non-members.

Bibliography of Photo-Mapping and Allied Subjects, compiled by Eric Haquinius and E. A. Shuster, Jr. References on use of aerial surveys and aerial photography for railway purposes included. 84 p. Published by U. S. Geological Survey, Washington, D. C., *Apply.*

Come Abroad With Us, by E. P. Leigh-Bennett and Leonard Richmond. Stating in a forword that "the world is awash with time-tables, guides, brochures and the litany of lists" the authors remark that they "merely seek to whet your appetite for holidays abroad by telling how ours was from time to time appeased"—and succeed admirably. One can find descriptions of nights on the Grand Canal in Venice or "My Mechanical Home" ("you see wax-work men in the act of building the Simplon Tunnel and learn what they encountered". "A railway engine cut lengthwise in half—and a torpedo") or "The Chocolate-Cream Express", the "Sud-Express" to be more formal. Illustrations in color. 116 p. Pub. by The Southern Railway of England, London, England. 2 shillings sixpence.

Flood-Lighting, by H. J. Mulleneux. "Systems adopted for lighting railway areas" p. 2-17. Technical Paper no. 267, Government of India Railway Board. 25 p. diagrams. Pub. by Central Publication Branch, Government of India, Calcutta, India. Available in this country through British Library of Information, New York City. 2 shillings ninepence.

Periodical Articles

Automatic Train Control Systems on the Railways of the United States, by A. Kammerer. Translation from a German periodical. Bulletin of the International Railway Congress Association, March 1929, p. 291-302.

Labor's Railroad Conference. Papers presented additional to those mentioned in the Booklist of March 16, including "Displacement of Railroad Labor" by Ethelbert Stewart (also mentioned in an earlier Booklist as printed in the Monthly Labor Review), "The Economic Factors in the Railroad Situation" by Prof. Wm. J. Cunningham, and "The Woman and the Railroad" by Margaret Talbott Stevens. American Federationist, April 1929, p. 464-482.

The Personal Factor in Highway Accidents, by Sidney J. Williams. ". . .the personal element is extremely important; and yet we have little or no exact knowledge of it. . . We have learned from industrial experience that if a man or group of men become sufficiently impressed with the necessity for avoiding accidents, accidents will stop." American Highways, April 1929, p. 20.

A Record Breaking Locomotive in the Argentine Republic, by Malcolm K. Wright. A Mountain type for the Buenos Aires and Pacific is described. Incidentally this article should be very helpful to teachers of economic geography and economic development and others having no direct interest in locomotives per se for it brings out the relation of the railroad to the development of its section. Baldwin Locomotives, April 1929, p. 2-8.

What Should Constitute a Grade Crossing Elimination Program, by E. W. James. "To summarize the thought presented in this report, it should be noted that the evaluation of intangibles is neglected and a method suggested that permits of an exact determination of economic losses by stop-watch methods." p. 19. American Highways, April 1929, p. 16-19.

Looking Backward

One Hundred Years Ago

A contract was let in April, 1829, for the grading and bridging of a road, to "be styled the Pennsylvania Railroad" [now part of the Pennsylvania], from Philadelphia, Pa., to Columbia, 40½ miles, under an act of the Pennsylvania State Legislature, passed on March 24, 1828, which provided that the railroad be constructed at the expense of the state.

Fifty Years Ago

W. W. Baldwin, a member of the Iowa bar, has been appointed land commissioner of the Burlington & Missouri River [now part of the Chicago, Burlington & Quincy]. His headquarters will be in Burlington, Iowa.—*Railway Age,* April 10, 1879.

A Minnesota gentleman has invented a one-rail railway for which he modestly claims that "the continent could be crossed in 24 hours, with his system in perfect working order." The distance "across the continent" by the present rail route is about 3,300 miles. To make the distance in 24 hours would require an average continuous speed, without allowing for any stops, of over 137 miles per hour.—*Railway Age,* April 10, 1879.

The Louisville & Nashville has taken steps to make such acquisitions of the St. Louis & Southeastern. [now part of the former road] securities as will enable it to eventually obtain an entrance into St. Louis, Mo. The three companies making up the St. Louis & Southeastern own 344 miles of line extending from Nashville, Tenn., through Guthrie, Ky., and Evansville, Ind., to St. Louis.—*Railroad Gazette,* April 13, 1879.

Twenty-Five Years Ago

The Tidewater [now the Virginian], which was incorporated in Virginia on February 20, plans to construct a railroad from the West Virginia state line on the New river in Giles county, Va., to tidewater at or near Norfolk, Va., a distance of 335 miles. The road will connect with the Deepwater [now a part of the Virginian], now under construction from Deepwater, W. Va., to Bluestone river, 116 miles, and will be built for heavy freight service. From the coal fields to tidewater there will be only one grade of any consequence—on the Blue Ridge divide between the New river and the Roanoke river.—*Railway Age,* April 15, 1904.

Ten Years Ago

H. M. Adams, director of inland transportation of the war department, with offices at Washington, D. C., has been appointed traffic assistant to the regional director of the Southwestern region of the Railroad Administration, with headquarters at St. Louis, Mo.—*Railway Age,* April 11, 1919.

Director General Hines this week granted an advance in wages to the four classes of train service employees—engineers, conductors, firemen and other trainmen, totaling about 400,000 men. It is estimated that the advance granted will average about 9 per cent and that their total cost will be $55,000,000 a year.—*Railway Age,* April 11, 1919.

The expenditure of $1,000,000 for advertising calculated to stimulate passenger travel has been authorized by the Railroad Administration. This money will be expended entirely in newspaper and magazine advertising and informative booklets, and will be devoted entirely to the exploitation of localities and not to the service of individual roads.—*Railway Age,* April 11, 1919.

Odds and Ends of Railroading

Dean Inge, speaking at a luncheon of the City Livery Club on December 14, observed that some people had a distressing habit of continually talking in railway carriages. Instead of compartments being labeled "smokers" and "non-smokers" they should be labeled "talkers."—Railway Gazette.

Supported by a staggering weight of evidence, Chief Dispatcher A. A. McKay of the Atlantic Coast Line, claims the big-mouth bass fishing championship. He recently caught one such weighing 10¼ lb., the largest bass caught in Virginia since 1910.

Sir Harry Lauder gave all of New Zealand a free laugh recently when he traveled second-class with a first-class ticket in his hand. The ticket was given to him by a fellow Scot, who was conductor on the train. Sir Harry rode many miles before discovering his error.

As a possible solution of the controversy which may arise over the origin of the word "whoopee" we submit from the *Railway Age* of February 27, 1879, the story of the engineman on the Indianapolis, Bloomington & Western (now part of the Cleveland, Cincinnati, Chicago & St. Louis) whose locomotive had its stack wrecked in a collision. "The engineman rigged up a sugar barrel and puffed triumphantly away. In other words, he (w)hooped her up."

Another Railway Barrister

George M. Digel, chief clerk to the division roadmaster of the Illinois Central, at Memphis, Tenn., is another addition to the field of railway lawyers, George having received his sheepskin from the Memphis law school.

No Sunday Service

The Due West Railway, a four-mile line from Due West, S. C., to Donalds, has a definite rule against operating on Sunday. This rule has been broken only once in the 21 years of its operation, and upon that occasion it was necessary to run a train to rush a girl to a hospital.

Six Brothers Repair Cars

It is seldom that six brothers are to be found working at the same occupation for the same company, but such is the case at the Lucknow plant on the Philadelphia division, where the six Zeider brothers are employed as car repairmen. They are: Ira P., Norman L., Alton E., Harry D., Warren B., and Merle C., ranging in service from 2 to 16 years.—Pennsylvania News.

A Cultured Foreman

Iwao Fukushima, maintenance of way foreman for the Union Pacific at Harper, Wyo., has had an unusual career. Coming from Japan to this country as a boy, he graduated from the high school at Cheyenne, Wyo., and from Colorado college. During the war he was an instructor in the U. S. Army radio school. From 1918 to 1928, he served as instructor at Dartmouth college and at the University of Minnesota.

"Sauerkraut Not Hazardous," Court Says

The Union Pacific was exonerated of any liability in the $25,000 damage suit filed against it by Fred Leehman, when Federal Judge Charles A. Dewey of Omaha directed a verdict in the railroad company's favor. Leehman, a mail clerk, was suing the Union Pacific for damages for alleged injuries he received after he is alleged to have eaten sauerkraut and spareribs at one of the railway restaurants.

The Value of a Bee

A superior court jury in Chicago recently decided that a bee is worth .000315 of a cent. The jury was called upon to settle the value of bees on the hoof, so to speak, when claimants sued the Chicago, Rock Island & Pacific, claiming that the railway was responsible for the death, in transit, of 20,000,000 bees.

California's Scenic Beauties May be Overworked

Just in case any one cares to know, F. S. McGinnis, passenger traffic manager of the Southern Pacific, estimates that the Suisun Bay bridge now under construction at San Francisco will be responsible for the saving of 10,000,000 "golden" tourist minutes per year.

Preparedness

It's a long range between ski and train travel, but Louis Erickson, Northern Pacific brakeman on the Coeur d'Alene branch, carries a pair of the former in the caboose of the freight train anyway. Recently, with five feet of snow covering the right-of-way behind the freight, Erickson was called to flag a passenger train. He hopped on the skis and glided through what would have been a difficult task. He says he believes in the motto: "Be prepared."

More Triplets

We have an extra brakeman on the Fitchburg division named Elmer James Smith, aged 27, who should be listed among the railroaders who are the fathers of triplets. He also has three other children. The complete family record follows:

Elmer, Jr.)
Raymond) Aged 4, born February 23, 1925.
Beatrice)
Gertrude, aged 2, born September 7, 1926.
Richard, aged 1, born December 15, 1927.
Paul, aged 4 mos., born December 30, 1928.

I doubt if you will find any other railroader who has six children, born in less than four years.

A. J. Dugas,
Train Dispatcher, Boston & Maine

Twins Serve Fifty Years

John W. Christy, engineman, and William J. Christy, clerk, have been placed on the pension list of the Philadelphia division of the Pennsylvania, upon reaching the age of 70. John and Bill are twins, and the accompanying photograph shows that they still resemble each other closely. Each is the proud possessor of a 50-year service record.

Wide World

The Christy Twins

NEWS *of the* WEEK

Tunkhannock Viaduct on the Lackawanna Main Line

A MEMORIAL TO EMPLOYEES of the Chicago & North Western who were killed in action in the World War was unveiled in the North Western passenger terminal at Chicago on April 6. The tablet, which carries the names of 108 railroad men, was presented by North Western Post No. 430 of the American Legion, and was accepted for the railroad by Fred W. Sargent, president.

THE RAILROAD COMMISSION OF TEXAS opened a hearing on April 4 at Terrell, Tex., on the removal of the shops and general offices of the Texas Midland from that city, following the railroad's purchase by the Southern Pacific. The city contends that the removal violates an agreement entered into with the city by the Texas Midland in 1897.

THE NORFOLK & WESTERN has applied to the Interstate Commerce Commission for authority to acquire and operate the terminal properties owned by the city of Norfolk, Va., at Sewalls Point, including land, track, wharves and a grain elevator, on the basis of a lease with provision for purchase at the expiration of the term in 1952.

THE "PRESIDENT PIERCE," one of the "President" class passenger locomotives of the Baltimore & Ohio, came into Washington, D. C., on April 3, with through passenger train No. 10, having hauled the train through from Chicago, 786 miles. This locomotive is stoker fired. The schedule of this train from Chicago to Washington is 21 hours, 15 minutes. From Chicago to Willard, Ohio, 279 miles, the train consisted of 14 cars; and of ten cars for the remainder of the trip.

THE ALBANY PORT DISTRICT, a state body employed to develop transportation facilities at Albany, N. Y., has had its powers somewhat enlarged by a law which was passed by the recent legislature and was signed by the Governor on April 5. The commission which manages the activites of this organization has been granted further power as to issuing and selling bonds and other obligations; and its powers now correspond to powers exercised by the Port Authority of New York.

THE ST. LOUIS RAILWAY CLUB at its annual meeting on April 12, elected the following officers for the ensuing year. President: M. W. Dancy, general agent of the Chicago & Alton; first vice-president, T. J. Frier, purchasing agent of the Wabash, second vice-president, W. Y. Brown, superintendent of car service of the Terminal Railroad Association of St. Louis; third vice-president, W. E. Hicks; and secretary-treasurer (re-elected), B. W. Frauenthal, general traffic agent of the St. Louis Public Service Company.

THE CORPORATION COMMISSION of Virginia, according to press dispatches has refused to give authority to the Railway Express Agency to do business within that state. The dispatches call attention to the fact that such an order does not affect interstate business. It appears that this decision is made in accordance with a section of the state constitution which would require the Railway Express Agency to establish a separate corporation to do business within Virginia. The American Railway Express Company, predecessor of the Railway Express Agency, did intrastate business in Virginia under a war-time order.

THE PACIFIC RAILWAY CLUB, at its annual meeting at the Clift Hotel, San Francisco, Cal., on March 26, elected J. P. Quigby, superintendent of transportation and telegraph of the Western Pacific, as its president for the ensuing year. Other officers elected were: K. C. Ingram, general advertising manager, Southern Pacific, first vice-president; J. P. Potter, vice-president in charge of operation, Key System Transit Company, second vice-president; Lacy L. Galbraith, conductor, Atchison, Topeka & Santa Fe, treasurer. William S. Wollner, general safety and fire inspection agent, Northwestern Pacific was re-elected secretary.

FEDERAL JUDGE FRANK KERRIGAN of San Francisco, Cal., on March 27 granted a temporary injunction to the Western Pacific, restraining the Southern Pacific from constructing additional industrial trackage across the proposed route of the former railroad between San Francisco and Redwood City. The Western Pacific application for a permanent injunction also asked the court to order the Southern Pacific to remove more than a mile of track that was laid across the proposed Western Pacific right-of-way at San Mateo, Cal., on March 23 and 24. In its complaint the Western Pacific declared that the spur was "poorly built, without ballast and simply to embarrass the plaintiff."

A. J. County to Address N. Y. Railroad Club

A. J. County, vice-president of the Pennsylvania, will address the New York Railroad Club at its next meeting, 8 p. m., April 19 at 29 West Thirty-ninth street, New York. His subject will be "Budgeting." The P. R. R.'s Red Arrow Quartette will sing.

New Bridge at Albany

Among the bills passed by the New York Legislature and this week signed by the Governor, is one providing for a new highway bridge across the Hudson River at Albany, the bill carrying an appropriation of $30,000 for surveys and plans. The bill also specifies the sum of $2,500,000 for the elimination of railroad grade crossings on the west approach to the proposed bridge.

G. N. and W. P.

Five engineering parties, comprising 80 men, exclusive of cooks and truck-drivers, have been placed in the field by the Great Northern and the Western Pacific to locate their proposed 200-mile joint line between Klamath Falls, Ore., and Paxton, Cal., or Keddie. Snow at high altitudes has hampered the work of the engineers on the Western Pacific section of the line, making it necessary to move supplies to the tent camps by means of caterpillar type tractors. The two Great Northern parties have been at work since March 11 and the first Western Pacific party reached the proposed line on March 19.

The Five-Day Week

The announcement of railroad labor leaders at Boston recently that the railroad labor unions generally were thinking of asking for a six-hour day was followed on April 5 by the announcement from Cleveland, Ohio, that the "Railroad Labor Executives' Association" had met there and had added to the six-hour day proposal a program for a general "stabilizing" effort to get the five-day week. This proposal—30 hours a week—was said to have been the result of discussions lasting through three days and participated in by 21 leading brotherhood officers.

Directors of Express Agency

At the first annual meeting of the Railway Express Agency, Incorporated, in New York City, on April 3, the following railroad officers were elected as directors of the corporation: Eastern district: J. J. Bernet (Erie); E. G. Buckland, (N. Y. N. H. & H.); P. E. Crowley, (N. Y. C.); Elisha Lee, (Penn.) T. C. Powell, (C. & E. I.); and G. M. Shriver, (B. & O.).

Western district: Charles Donnelly, (N. P.): Carl R. Gray, (U. P.); Hale Holden, (So. Pac.); W. B. Storey, (A. T. & S. Fe.); W. H. Williams, (Mo. Pac.).

Southern district: C. R. Capps, (S. A. L.); Lyman Delano, (A. C. L.); L. A. Downs, (Ill. Cent.).

Robert E. M. Cowie, president of the Railway Express Agency, was elected director at large.

Effective Date of Firedoor Order Postponed

The Interstate Commerce Commission on April 10 announced that, on petition filed by the American Railway Association in behalf of its members, it had postponed from April 1 to July 1 the effective date of that part of its recent order requiring the equipment of locomotives with mechanically-operated firedoors which applies to locomotives in service. The postponement applies only in those instances where necessary equipment is not available and all locomotives are to be equipped by July 1, 1931. The A. R. A. had asked a postponement to August 1, stating that the railroads find it impossible to comply with the order of February 21 in the time specified but that they are proceeding with the application of the doors to the locomotives as they pass through the shops, in so far as the necessary designs and materials are available.

Floods in Canada

Railroad traffic between Montreal and Toronto was seriously interrupted April 6 and for several days following, by extensive rains, classed in some places as cloudbursts. Near Bowmansville, Ont., a passenger train of the Canadian National was derailed at a washout and the engineman was killed, though the train was moving very slowly.

Through passenger traffic between Montreal and Toronto was seriously disturbed on both the Canadian Northern and the Canadian Pacific for several days. It was announced in Montreal that Canadian Pacific trains which were unable to complete their regular trips, would carry dining cars, for the accommodation of passengers who might be delayed by the flood conditions. Damage to roadway from high water on certain branch lines was not repaired until Monday, April 8.

Trespassers on the Southern

It takes about seven years and four months to kill one thousand trespassers on the lines of the Southern Railway. This is an average deducible from a statement which has been issued by the Southern Railway in which it is shown that the numbers of trespassers killed on the lines of that system during the past seven years were as shown below:

1928	140	1924	130
1927	140	1923	154
1926	135	1922	129
1925	128		

and the number of trespassers injured each year was quite uniformly about one-third larger than the number killed.

For the last year, 104 of the killed were trespassing on tracks and 36 were killed while trespassing on trains. As on most other American Railways, the majority of victims in this class are found to be, not tramps, but useful citizens, or children using the tracks as habitual paths on their way to and from places of work; or school boys playing around freight cars.

The Southern operates 8053 miles of line and uses 2318 locomotives.

March Locomotive Shipments

March shipments of railroad locomotives from principal manufacturing plants, based on reports received by the Department of Commerce, totalled 35 locomotives, as compared with 23 in February and 70 in March, 1928. The following table gives the shipments and unfilled orders of locomotives for March, 1928 and 1929, the 1928 totals and totals for the first three months of the two years:

RAILROAD LOCOMOTIVES

Shipments

Year and Month	Total	Domestic		Foreign	
		Steam	Electric	Steam	Electric
1929					
March	35	31	4	..	..
Total (3 months)	81	57	11	13	..
1928					
March	70	44	15	9	2
Total (3 months)	176	109	49	16	2
Total (year)	550	367	92	87	4

Unfilled orders, end of March

	Total	Domestic		Foreign	
		Steam	Electric	Steam	Electric
1929	488	419	24	45	..
1928	178	123	37	16	2

Superintendents to Go to Mexico City

At a meeting held in Chicago on April 6, officers of the American Association of Railway Superintendents decided to proceed with the plans approved at the last convention to hold their next annual meeting in Mexico City, on June 4-7. In arriving at this decision, the committee was guided by advice received from President Portes Gil of the Republic of Mexico, U. S. Ambassador Dwight Morrow, and officers of the National Railways of Mexico and of the Missouri Pacific, resident in that country.

Arrangements were made for a special train to be operated by the Missouri Pacific and the National Railways of Mexico, leaving St. Louis, Mo. at 2 p.m., on Friday, May 31; San Antonio, Texas at 4 p.m., June 1, and arriving in Mexico City on Monday noon, June 3. This train will leave Mexico City on the return trip at midnight Sunday, June 9, and travel by way of San Louis Potosi, Tampico and Monterrey, Mexico, and Brownsville, Texas, arriving at Houston at midnight, June 12, and at St. Louis at 10 p.m., June 13.

New York Central Breaks with Port Authority

The New York Central has severed relations with the Port of New York Authority because of an attack on the railroad delivered by Wilbur LaRoe, Jr., of counsel for the Port Authority, during the recent arguments before the Interstate Commerce Commission at Washington in connection with the New York constructive and off-track station investigation.

As a result of the breach three New York Central officers have resigned from the advisory posts which they held with the Port Authority. They are R. E. Daugherty, engineering assistant to the president, G. C. Woodruff, assistant freight traffic manager, and F. N. Melius, marine manager. These men served on sub-committees of the general committee of railroad officers, representing the several lines entering the port district, and appointed to work in concert with the Port Authority on terminal problems. Mr. LaRoe's attack was answered at the Washington hearing by Clyde Brown, general solicitor, who represented the New York Central throughout the New York constructive and off-track stations investigation.

U. S. Chamber of Commerce Meeting

The 17th annual meeting of the Chamber of Commerce of the United States will be held in Washington, D. C., on April 29-May 3. Among the addresses and discussions will be the following: Business Problems Common to Canada and the United States, by the Honorable C. H. Cahan, member of the Canadian Parliament; Credit Supply and the Security Market, by Colonel Leonard P. Ayres of Cleveland, O.; the Tax Dollar, by John G. Lonsdale, president of the National Bank of Commerce, St. Louis.

Robert P. Lamont, Secretary of Commerce, will address the convention on May 2 and at the annual dinner, on the same day, Paul Shoup, president of the Southern Pacific, will preside as toastmaster.

Among the round-table luncheon dis-

(Continued on Page 862)

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1929

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Akron, Canton & Youngstown	Feb.	171	$295,754	$155	$304,762	$39,371	$27,209	$13,336	$73,947	$16,068	$169,931	55.8	$134,831	115,780	$79,346	$40,059
	2 mos.	171	596,191	324	614,237	80,038	52,951	26,983	152,270	30,878	341,542	55.6	272,695	231,056	158,459	74,513
Atchison, Topeka & Santa Fe	Feb.	9,391	11,435,445	2,945,948	15,655,332	2,161,490	3,127,519	395,402	4,755,183	432,116	10,873,200	69.5	4,782,132	3,365,586	3,509,041	2,590,707
	2 mos.	9,391	23,122,494	5,976,703	31,740,725	3,824,535	6,544,469	847,790	9,889,802	895,481	22,009,525	69.3	9,731,200	6,881,859	7,090,458	5,038,418
Gulf, Colorado & Santa Fe	Feb.	1,944	1,754,008	161,457	2,037,296	536,248	439,975	54,506	669,009	72,255	1,769,557	86.9	267,739	173,523	73,005	69,216
	2 mos.	1,944	3,836,333	345,698	4,432,955	901,244	897,107	112,609	1,421,681	140,379	3,469,777	78.3	963,178	788,454	569,879	95,864
Panhandle & Santa Fe	Feb.	1,024	802,768	79,568	939,388	37,225	172,032	11,358	295,390	25,784	539,619	57.4	399,769	342,948	279,944	32,261
	2 mos.	1,024	1,718,663	179,818	2,020,416	150,268	366,766	24,656	610,301	53,714	1,201,692	59.5	818,724	703,383	561,391	147,720
Atlanta & West Point	Feb.	93	145,375	45,625	226,162	25,899	40,315	12,447	81,793	14,320	179,783	79.5	46,379	32,125	20,502	21,253
	2 mos.	93	293,519	99,087	461,034	51,018	84,509	24,783	171,378	27,942	369,081	80.1	91,953	62,406	40,484	59,108
Western of Alabama	Feb.	133	152,024	51,899	231,162	42,477	49,618	12,766	78,090	14,902	201,871	87.3	29,291	15,713	17,903	61,805
	2 mos.	133	304,411	109,377	467,228	75,193	104,123	25,252	163,287	28,851	404,936	86.7	62,292	31,109	35,090	145,726
Atlanta, Birmingham & Coast	Feb.	639	292,645	17,337	348,945	79,117	73,515	25,614	147,000	18,006	352,921	101.1	—3,976	—20,776	—32,296	—33,895
	2 mos.	639	592,915	39,243	709,328	164,051	155,242	54,914	295,927	38,187	729,215	102.8	—19,887	—53,482	—73,778	—68,693
Atlantic Coast Line	Feb.	5,147	4,824,403	1,775,228	7,273,999	832,333	1,030,446	163,786	2,123,218	173,272	4,415,629	60.7	2,858,370	2,255,459	2,126,900	1,151,319
	2 mos.	5,145	9,505,850	3,134,172	13,881,272	1,674,610	2,098,399	349,525	4,325,676	359,698	8,976,930	64.7	4,904,342	3,700,298	3,583,591	1,988,047
Charleston & Western Carolina	Feb.	342	224,673	9,733	244,031	70,798	31,136	7,833	93,516	6,085	209,368	85.8	34,663	13,160	10,927	—5,440
	2 mos.	342	454,071	20,877	494,794	124,947	70,538	14,474	188,578	12,630	411,162	83.1	83,632	40,632	45,227	29,735
Baltimore & Ohio	Feb.	5,639	14,838,341	1,645,902	17,650,276	2,328,760	3,926,794	471,630	6,584,720	634,025	14,108,378	79.9	3,541,898	2,514,998	2,322,972	1,444,068
	2 mos.	5,639	30,555,113	3,487,697	36,417,546	4,657,479	8,023,310	936,958	13,590,472	1,317,414	28,873,945	79.3	7,543,601	5,489,041	5,038,587	3,351,192
Baltimore & Ohio Chic. Term.	Feb.	82	.....	.....	322,279	24,159	37,396	2,060	174,005	14,632	258,589	80.2	63,690	5,448	92,917	96,933
	2 mos.	82	.....	.....	636,047	55,329	80,309	4,269	360,960	31,149	544,578	85.6	91,469	—22,575	150,402	156,682
Staten Island Rapid Transit	Feb.	23	97,518	105,828	213,270	20,258	18,459	1,954	105,094	15,017	160,782	75.4	52,488	34,485	—3,072	8,430
	2 mos.	23	202,954	217,285	441,421	49,462	38,737	3,954	213,930	30,908	336,991	76.3	104,430	67,422	—4,854	9,719
Bangor & Aroostook	Feb.	619	724,525	62,918	812,223	99,680	103,117	5,061	190,461	27,017	428,292	52.7	383,931	314,940	311,267	242,252
	2 mos.	619	1,383,590	124,710	1,559,282	200,569	221,800	9,935	383,860	55,561	877,594	56.3	681,688	553,572	548,649	457,679
Belt Ry. Co. of Chicago	Feb.	48	.....	.....	676,448	69,566	76,222	3,614	334,308	14,981	498,691	73.7	177,757	127,959	142,517	147,374
	2 mos.	48	.....	.....	1,314,176	112,228	148,744	7,563	674,716	28,338	971,589	73.9	342,587	242,272	307,419	289,463
Bessemer & Lake Erie	Feb.	227	633,745	7,472	658,455	53,790	297,508	13,257	246,177	35,044	634,170	96.3	24,285	—40	51,610	—55,864
	2 mos.	227	1,318,622	15,698	1,368,163	104,970	629,983	27,821	508,845	70,925	1,322,708	96.7	45,455	—3,236	97,686	—83,828
Bingham & Garfield	Feb.	33	43,705	.....	45,666	2,695	3,433	1,410	9,603	4,247	21,550	47.2	24,116	14,869	32,150	16,630
	2 mos.	33	85,228	.....	89,184	13,380	5,598	3,247	20,803	8,532	51,896	58.2	37,288	19,958	55,266	34,103
Boston & Maine	Feb.	2,080	3,830,668	1,302,537	5,860,871	888,884	960,786	88,401	2,153,474	201,065	4,312,509	73.6	1,548,362	1,239,416	1,012,681	1,037,234
	2 mos.	2,080	7,744,217	2,689,611	11,901,963	1,842,817	1,961,281	178,384	4,499,558	415,751	8,926,271	75.0	2,975,692	2,370,803	1,910,192	1,835,339
Brooklyn East. Dist. Terminal	Feb.	11	109,826	.....	112,197	4,718	9,463	394	39,296	6,416	60,287	53.7	51,910	43,739	43,739	41,782
	2 mos.	11	222,435	.....	227,390	9,140	19,855	1,456	81,032	13,079	124,562	54.8	102,828	85,985	85,985	81,955
Buffalo & Susquehanna	Feb.	253	142,957	1,097	153,830	26,820	50,671	1,736	47,806	7,610	134,643	87.5	19,187	17,087	33,728	15,396
	2 mos.	253	306,862	2,348	329,379	55,066	96,992	3,651	99,528	16,001	271,238	82.3	58,141	53,941	88,998	36,189
Buffalo, Rochester & Pittsburgh	Feb.	601	1,238,094	71,616	1,349,744	113,785	389,460	30,781	505,409	44,484	1,086,242	80.5	263,502	213,437	237,480	252,465
	2 mos.	601	2,544,776	151,393	2,776,203	248,187	766,824	66,061	1,054,887	90,626	2,229,350	80.3	546,853	446,718	487,480	482,565
Canadian Pacific Lines in Maine	Feb.	233	315,512	30,029	356,394	25,501	68,575	5,920	150,743	3,881	254,620	71.4	101,774	87,274	56,543	41,548
	2 mos.	233	664,928	59,793	748,243	50,964	148,320	12,031	343,604	8,367	563,286	75.2	184,957	155,957	89,735	105,547
Canadian Pacific Lines in Vermont	Feb.	85	114,160	24,186	156,906	16,843	32,007	1,657	93,814	2,272	146,593	93.4	10,313	6,293	—21,750	—13,810
	2 mos.	85	211,125	67,458	316,210	38,385	64,443	3,442	191,283	4,138	301,691	95.4	14,519	6,479	—54,934	—80,487
Central of Georgia	Feb.	1,944	1,381,714	348,660	1,905,871	255,064	337,848	73,524	714,388	89,233	1,484,862	77.9	421,009	295,232	304,658	296,858
	2 mos.	1,944	2,808,604	650,537	3,819,048	508,481	690,704	142,273	1,482,023	178,469	3,030,447	79.4	788,601	555,697	595,767	581,887
Central New Jersey	Feb.	690	3,453,282	637,317	4,361,107	395,705	970,204	70,958	1,713,707	126,767	3,317,763	76.1	1,043,344	875,634	697,674	572,743
	2 mos.	690	7,117,443	1,311,889	8,970,174	795,232	2,057,145	120,429	3,540,937	264,228	6,843,500	76.3	2,126,674	1,743,503	1,401,429	1,041,771
Central Vermont	Feb.	412	450,057	101,955	621,801	76,570	92,959	15,764	271,142	23,275	482,029	77.5	139,772	123,526	133,351	—430,254
	2 mos.	412	908,902	191,169	1,236,457	159,107	189,887	32,291	555,199	46,309	987,121	79.8	249,336	216,929	233,406	—867,399
Chesapeake & Ohio	Feb.	2,730	9,570,453	467,970	10,381,684	1,510,750	2,193,686	132,766	2,656,211	272,950	6,789,099	65.4	3,592,585	2,897,805	3,104,590	1,987,268
	2 mos.	2,730	19,328,418	1,000,248	21,020,883	3,095,849	4,658,333	272,831	5,470,128	556,694	14,104,872	67.1	6,916,011	5,527,062	5,956,496	4,209,896
Chicago & Alton	Feb.	1,028	1,619,085	439,656	2,284,501	197,397	465,341	73,385	855,384	60,842	1,673,669	73.3	610,832	504,876	362,618	177,047
	2 mos.	1,028	3,155,749	955,458	4,560,068	384,188	1,023,538	157,500	1,801,925	122,890	3,537,092	77.6	1,022,976	812,037	525,811	166,785
Chicago & Eastern Illinois	Feb.	946	1,576,444	276,202	2,015,269	229,224	406,231	80,576	797,355	69,011	1,595,038	79.1	420,231	299,237	154,146	126,599
	2 mos.	946	3,221,270	595,194	4,153,206	460,182	843,905	163,126	1,658,067	143,775	3,294,070	79.3	859,136	617,157	328,692	122,129
Chicago & Illinois Midland	Feb.	131	245,779	6,787	259,130	31,148	56,459	17,254	67,731	18,931	191,519	73.9	67,611	59,676	55,654	75,409
	2 mos.	131	483,213	14,738	511,146	61,289	108,398	35,758	139,710	36,791	381,909	74.7	129,237	113,367	103,396	129,183
Chicago & North Western	Feb.	8,466	7,914,413	1,866,813	10,950,401	1,150,220	2,294,338	197,382	4,679,210	363,733	8,758,611	80.0	2,191,790	1,415,194	1,182,872	1,275,632
	2 mos.	8,466	15,446,270	3,980,925	21,798,905	2,427,037	4,643,631	391,837	9,612,157	747,100	17,970,140	82.4	3,828,765	2,275,816	1,809,687	2,162,960
Chicago, Burlington & Quincy	Feb.	9,374	10,373,226	1,331,356	12,822,579	765,325	1,774,894	260,618	4,315,791	354,782	7,538,073	58.8	5,284,506	4,039,842	3,778,263	3,220,930
	2 mos.	9,374	20,511,285	2,915,343	25,705,385	1,891,400	3,909,542	490,643	8,896,111	737,545	16,074,290	62.5	9,631,095	7,182,183	6,647,588	5,899,287

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1929—CONTINUED

Chicago, Burlington & Quincy	Feb.	9,374	10,373,226	1,331,356	12,822,579	765,325	1,774,894	260,618	4,315,791	354,782	7,538,073	58.8	5,284,506	4,039,842	3,778,263	3,220,930
	2 mos.	9,374	20,511,285	2,915,343	25,705,385	1,891,400	3,909,542	490,643	8,896,111	737,545	16,074,290	62.5	9,631,095	7,182,183	6,647,588	5,899,287

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Chicago Great Western	Feb.	1,495	$1,514,521	$220,164	$1,883,032	$183,821	$350,622	$75,429	$910,490	$53,967	$1,586,111	84.2	$296,921	$208,004	$36,054	$146,740
	2 mos.	1,495	2,994,509	467,368	3,768,589	364,331	699,704	160,291	1,840,029	112,672	3,201,436	85.0	567,153	395,157	81,792	134,158
Chicago, Indianapolis & Louisville	Feb.	650	1,096,250	136,527	1,374,569	126,366	296,207	36,238	547,011	35,477	1,054,197	76.7	320,372	246,422	123,405	144,321
	2 mos.	650	2,199,491	303,800	2,789,096	254,342	615,229	75,486	1,123,523	73,973	2,169,029	77.8	620,067	473,317	235,644	260,244
Chicago, Mil., St. Paul & Pacific	Feb.	11,251	9,901,495	1,268,010	12,360,672	1,230,155	2,401,903	310,223	5,105,289	347,552	9,464,150	76.6	2,896,522	2,106,624	1,509,931	2,798,980
	2 mos.	11,251	19,765,862	2,747,143	24,985,363	2,589,893	4,980,006	582,083	10,394,600	728,606	19,417,010	77.7	5,568,353	3,934,263	2,853,070	3,771,382
Chicago River & Indiana	Feb.	20	.....	.....	544,116	44,247	55,497	753	205,184	15,076	320,757	59.0	223,359	183,114	261,364	276,248
	2 mos.	20	.....	.....	1,137,008	86,024	107,177	1,471	432,308	29,190	656,170	57.7	480,838	394,454	565,070	523,216
Chicago, Rock Island & Pacific	Feb.	7,564	8,344,374	1,457,556	10,738,369	1,342,704	2,055,998	245,000	4,203,868	340,538	8,320,225	77.5	2,418,144	1,692,407	1,236,939	1,513,651
	2 mos.	7,564	16,598,383	3,190,895	21,701,716	2,688,173	4,210,463	490,090	8,560,642	709,857	16,906,326	77.9	4,795,390	3,343,748	2,489,488	2,606,457
Chicago, Rock Island & Gulf	Feb.	516	472,520	73,118	586,964	50,230	54,960	19,600	184,507	22,101	331,961	56.6	255,003	228,053	194,273	148,680
	2 mos.	516	953,850	140,886	1,178,552	111,292	115,995	39,772	381,410	40,926	692,441	58.8	486,111	432,260	359,620	295,839
Chicago, St. Paul, Minn. & Omaha	Feb.	1,746	1,510,576	313,869	1,978,374	242,888	363,483	36,441	1,002,448	78,927	1,733,598	87.6	244,776	134,642	68,545	211,976
	2 mos.	1,746	3,053,506	664,559	4,040,996	496,066	755,447	75,837	2,064,727	161,334	3,572,970	88.4	468,026	245,574	122,419	260,550
Clinchfield	Feb.	309	565,725	13,373	591,418	53,763	138,344	21,741	119,264	16,761	349,934	59.2	241,484	166,452	290,587	214,339
	2 mos.	309	1,150,304	27,917	1,202,606	110,104	272,826	43,727	251,396	34,672	712,966	59.3	489,640	339,569	565,078	444,215
Colorado & Southern	Feb.	1,035	769,900	82,974	935,189	84,319	182,834	15,855	323,825	41,373	652,187	69.7	283,002	214,301	199,932	74,172
	2 mos.	1,035	1,597,366	176,222	1,940,670	190,974	391,695	31,864	692,318	86,753	1,404,817	72.4	535,853	386,885	356,152	256,935
Ft. Worth & Denver City	Feb.	695	701,422	125,880	881,242	113,532	142,654	20,321	275,025	36,401	583,096	66.2	298,146	240,895	238,013	239,755
	2 mos.	695	1,521,813	277,206	1,914,611	207,249	285,337	39,583	579,871	78,511	1,197,237	62.5	717,374	590,034	583,367	539,268
Wichita Valley	Feb.	271	110,418	9,582	124,527	13,354	10,987	33	37,596	1,644	63,617	51.1	60,910	52,502	32,938	42,652
	2 mos.	271	237,853	19,269	267,964	34,116	21,860	74	81,547	3,616	141,019	52.6	126,945	109,686	68,665	83,510
Columbus & Greenville	Feb.	167	116,351	14,277	138,051	30,087	19,171	3,757	51,320	11,167	115,501	83.7	22,550	18,942	9,526	5,335
	2 mos.	167	255,884	34,432	308,293	68,494	38,854	8,096	113,861	25,288	254,589	82.6	53,704	46,197	22,418	11,968
Conemaugh & Black Lick	Feb.	22	65,394	.....	141,444	12,925	23,257	846	87,634	2,632	127,294	90.0	14,150	13,150	12,301	—12,593
	2 mos.	22	129,975	.....	289,310	26,121	42,021	1,715	181,547	6,151	257,555	89.0	31,755	29,755	24,185	—21,640
Delaware & Hudson	Feb.	881	2,745,720	238,276	3,205,910	379,917	757,375	53,654	1,246,243	157,440	2,599,765	81.1	606,145	516,688	537,826	304,327
	2 mos.	881	5,435,928	527,557	6,393,789	831,484	1,567,522	106,447	2,499,382	328,117	5,342,626	83.6	1,051,163	872,706	877,310	324,236
Delaware, Lackawanna & Western	Feb.	998	4,895,100	866,537	6,458,254	481,756	1,093,410	130,742	2,577,400	171,334	4,490,237	69.5	1,968,017	1,394,025	1,404,134	798,408
	2 mos.	998	9,913,773	1,812,583	13,161,863	1,150,801	2,351,085	265,809	5,338,402	357,606	9,548,669	72.5	3,613,194	2,506,645	2,508,912	1,654,954
Denver & Rio Grande Western	Feb.	2,547	2,064,323	216,152	2,443,382	364,612	493,964	53,832	760,483	87,727	1,785,859	73.1	657,523	472,418	540,184	379,139
	2 mos.	2,547	4,406,948	446,300	5,192,311	751,251	1,016,154	110,412	1,610,731	174,750	3,715,876	71.6	1,476,435	1,126,327	1,257,239	986,488
Denver & Salt Lake	Feb.	232	380,637	16,698	413,898	30,510	75,826	2,436	61,295	11,528	181,595	43.9	232,303	222,303	223,408	85,329
	2 mos.	232	742,126	35,043	810,573	61,851	153,718	4,003	119,359	22,943	361,874	44.6	448,699	428,699	438,074	252,628
Detroit & Mackinac	Feb.	300	79,501	9,585	97,238	15,203	33,363	1,923	40,336	5,296	96,116	98.8	1,122	—9,292	—6,267	6,002
	2 mos.	300	149,563	23,394	187,235	30,442	65,135	3,952	82,312	11,025	192,909	103.0	—5,674	—26,640	—20,959	6,335
Detroit & Toledo Shore Line	Feb.	50	511,471	.....	517,641	28,563	33,549	7,464	119,203	7,912	196,689	38.0	320,952	280,140	169,208	145,300
	2 mos.	50	960,292	.....	971,660	53,373	70,255	15,213	237,711	17,956	394,506	40.6	577,154	500,963	297,543	250,856
Detroit Terminal	Feb.	19	.....	.....	244,763	14,151	20,389	.....	110,516	4,669	149,725	61.2	95,038	73,803	74,774	35,312
	2 mos.	19	.....	.....	466,082	32,363	40,690	.....	207,705	9,149	289,907	62.2	176,175	134,945	137,555	52,680
Detroit, Toledo & Ironton	Feb.	495	1,159,230	3,006	1,182,665	116,594	151,493	13,254	286,642	29,139	596,908	50.5	585,757	503,605	413,707	88,284
	2 mos.	495	2,473,876	6,414	2,526,790	214,068	324,098	25,079	597,849	58,902	1,218,998	48.2	1,307,792	1,137,372	938,175	112,390
Duluth & Iron Range	Feb.	269	88,365	4,829	108,011	55,372	109,009	1,532	87,508	25,812	279,233	258.5	—171,222	—191,485	—189,586	—179,165
	2 mos.	269	168,361	11,874	208,475	114,031	223,831	3,161	175,348	42,961	559,332	268.3	—350,857	—391,025	—390,679	—374,528
Duluth, Missabe & Northern	Feb.	307	76,438	3,691	93,162	82,115	172,991	2,716	120,143	22,907	400,872	430.3	—307,710	—406,562	—406,162	—359,931
	2 mos.	307	138,576	8,291	172,652	153,326	349,116	5,766	252,663	45,935	806,684	467.2	—634,032	—831,108	—835,006	—746,345
Duluth, Winnipeg & Pacific	Feb.	178	194,101	14,118	216,067	19,228	46,938	4,603	77,544	8,901	159,738	73.9	56,329	45,648	48,879	66,738
	2 mos.	178	380,056	28,011	424,155	39,274	88,638	9,313	159,090	16,364	317,634	74.9	106,521	85,436	94,105	104,502
Elgin, Joliet & Eastern	Feb.	453	1,903,917	1	2,087,962	163,175	350,062	14,894	802,980	50,922	1,381,998	66.2	705,964	574,465	342,628	370,577
	2 mos.	452	3,681,861	7	4,049,482	336,907	764,068	29,836	1,563,452	104,438	2,798,607	69.1	1,250,875	1,012,573	591,038	649,308
Erie Railroad	Feb.	2,047	7,213,370	754,845	8,683,472	814,579	1,888,176	169,029	3,458,320	292,924	6,680,607	76.9	2,002,865	1,577,062	1,467,226	821,380
	2 mos.	2,047	14,611,665	1,561,228	17,588,180	1,681,548	4,035,017	341,616	7,058,637	591,476	13,811,099	78.5	3,777,081	2,965,760	2,769,800	1,360,825
Chicago & Erie	Feb.	269	1,097,507	33,284	1,218,443	112,595	143,755	27,797	370,048	40,625	694,785	57.0	523,658	467,539	174,766	120,049
	2 mos.	269	2,184,490	81,450	2,430,726	237,519	266,528	56,345	759,100	82,795	1,401,694	57.7	1,029,032	916,798	321,475	2,559
New Jersey & New York	Feb.	45	21,472	90,506	117,076	14,373	22,841	1,753	67,295	3,557	109,802	93.8	7,274	3,166	—28,657	—28,192
	2 mos.	45	46,201	184,141	240,034	27,850	40,197	3,267	138,702	7,163	217,156	90.5	22,878	14,662	—49,564	—64,166
N. Y., Susquehanna & Western	Feb.	131	337,195	40,162	412,289	42,929	54,944	5,181	199,357	11,494	315,097	76.4	97,162	66,141	40,876	—3,743
	2 mos.	131	681,506	82,450	834,281	86,221	103,978	10,145	405,821	23,000	630,352	75.6	203,929	141,820	92,135	—30,015
Evansville, Indianapolis & Terre Haute	Feb.	146	183,618	3,428	193,314	18,820	22,242	1,658	64,024	5,234	111,975	57.9	81,339	72,832	32,159	13,910
	2 mos.	146	364,760	7,072	384,040	40,407	43,898	3,819	130,956	11,500	230,407	60.0	153,633	136,995	61,235	27,140
Florida East Coast	Feb.	853	823,145	811,170	1,842,497	170,335	181,017	32,944	384,749	47,687	859,823	46.7	982,674	834,719	765,551	493,688
	2 mos.	853	1,528,140	1,284,286	3,206,620	354,601	354,759	69,906	773,265	101,400	1,730,159	54.0	1,476,461	1,187,607	1,051,293	644,127

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Fort Smith & Western	Feb.	249	$102,261	$10,258	$119,305	$23,901	$25,205	$6,199	$43,356	$7,296	$105,397	88.3	$13,908	$9,188	$2,570	$1,172
	2 mos.	249	236,107	20,146	271,976	49,290	54,024	12,343	89,496	14,421	218,051	80.2	53,925	44,443	29,761	2,990
Galveston Wharf	Feb.	13	.....	.....	166,012	37,573	6,077	5,120	30,192	5,441	101,670	61.2	64,342	47,342	47,253	22,745
	2 mos.	13	.....	.....	394,943	78,963	10,772	9,252	64,449	14,320	216,434	54.8	178,509	144,509	144,429	46,081
Georgia Railroad	Feb.	328	319,061	45,818	395,006	39,821	76,887	22,485	173,637	23,384	336,510	85.2	58,496	49,806	62,658	40,003
	2 mos.	328	642,662	100,505	806,750	83,591	167,328	44,459	362,890	47,070	705,792	87.5	100,958	84,136	113,903	89,631
Georgia & Florida	Feb.	445	94,396	9,933	112,637	19,923	20,192	8,925	50,483	8,313	103,492	91.9	9,145	—567	3,909	17,207
	2 mos.	445	188,911	18,884	225,215	44,597	45,769	18,867	102,979	16,921	221,819	98.5	3,396	—16,041	—6,740	19,072
Grand Trunk Western	Feb.	345	1,667,033	161,338	1,920,180	102,410	363,617	41,496	619,722	63,883	1,204,976	62.8	715,204	623,654	570,487	264,231
	2 mos.	345	3,100,028	335,681	3,611,604	228,490	735,978	84,499	1,226,907	132,200	2,435,731	67.4	1,175,873	992,823	884,392	480,685
Atlantic & St. Lawrence	Feb.	166	145,954	19,593	182,375	28,853	34,750	5,509	100,757	8,135	179,774	98.5	2,601	—12,059	—67,346	—67,677
	2 mos.	166	272,360	51,966	357,554	61,007	78,469	11,308	210,297	16,105	380,770	106.5	—23,216	—52,776	—164,605	—145,286
Chic., Det. & Canada Gr. Tr. Jct.	Feb.	59	272,063	833	315,878	12,048	16,335	4,824	96,007	4,082	133,295	42.2	182,583	171,683	130,310	98,936
	2 mos.	59	556,419	1,632	646,267	30,688	33,053	9,487	193,384	8,249	274,821	42.5	371,446	349,646	282,958	203,729
Detroit, Grand Haven & Mil.	Feb.	192	587,865	25,893	660,023	45,056	66,657	13,766	279,678	17,862	422,895	64.1	237,128	225,278	103,343	133,847
	2 mos.	192	1,142,938	53,115	1,295,165	100,211	132,931	27,479	559,600	37,240	856,999	66.2	438,166	414,466	204,598	177,528
Great Northern	Feb.	8,405	5,792,743	855,661	7,472,257	1,029,830	1,615,292	255,204	3,057,555	222,250	6,264,306	83.8	1,207,951	540,923	458,098	1,098,852
	2 mos.	8,403	11,494,625	1,766,106	14,827,897	2,094,513	3,274,076	508,750	6,185,058	399,036	12,610,653	85.0	2,217,244	864,288	716,841	1,475,453
Green Bay & Western	Feb.	234	124,594	6,271	133,961	19,826	22,093	4,724	63,070	2,885	112,562	84.0	21,399	13,351	9,434	20,098
	2 mos.	234	261,005	13,536	283,719	42,690	47,374	10,209	136,551	6,016	242,289	85.3	41,430	25,382	16,348	39,237
Gulf & Ship Island	Feb.	307	180,194	39,467	247,263	51,686	41,671	4,851	96,758	6,569	205,195	83.0	42,068	10,382	—6,015	38,542
	2 mos.	307	384,349	76,111	509,031	99,791	89,453	10,604	197,889	14,867	419,090	82.3	89,941	25,765	912	40,050
Gulf, Mobile & Northern	Feb.	733	476,909	23,322	525,803	87,059	83,042	32,676	169,899	26,197	399,130	75.91	126,673	90,232	61,136	71,740
	2 mos.	733	1,024,230	47,715	1,125,403	175,768	182,650	64,600	358,005	55,908	837,479	74.42	287,924	211,436	151,192	143,671
Hocking Valley	Feb.	348	1,419,709	58,775	1,556,842	215,804	284,974	15,892	436,283	42,924	995,876	64.0	560,966	430,536	440,121	165,772
	2 mos.	348	2,863,874	121,985	3,135,061	401,942	585,770	32,683	888,859	88,062	1,997,314	63.7	1,137,747	876,987	904,474	347,197
Illinois Central	Feb.	5,034	10,023,401	1,940,454	12,819,707	1,340,089	2,777,606	246,632	4,648,469	350,493	9,476,728	73.9	3,342,979	2,413,484	2,337,769	2,102,355
	2 mos.	5,036	20,138,335	3,990,816	25,814,072	2,705,431	5,591,811	554,826	9,486,929	718,764	19,257,010	74.6	6,557,062	4,720,685	4,587,311	3,970,829
Yazoo & Mississippi Valley	Feb.	1,705	1,626,259	242,078	1,997,867	342,595	388,979	42,781	832,745	62,205	1,675,201	83.8	322,666	152,492	79,164	154,133
	2 mos.	1,705	3,362,377	509,376	4,135,291	697,089	771,637	87,360	1,687,916	127,856	3,382,997	81.8	752,294	411,913	265,240	337,970
Illinois Central System	Feb.	6,740	11,660,870	2,185,642	14,831,895	1,682,684	3,170,128	289,413	5,489,579	412,845	11,163,984	75.3	3,667,911	2,567,326	2,418,283	2,248,112
	2 mos.	6,741	23,523,893	4,507,157	29,979,512	3,402,520	6,370,582	642,186	11,193,150	846,914	22,665,740	75.6	7,313,772	5,135,182	4,855,135	4,296,423
Illinois Terminal	Feb.	473	397,782	136,746	556,441	61,090	82,426	21,831	215,521	43,214	423,885	76.00	132,556	111,191	66,201	114,687
	2 mos.	473	852,543	285,485	1,181,631	125,215	157,467	40,828	426,027	86,346	835,686	70.72	345,945	303,298	214,451	237,830
Kansas City, Mexico & Orient	Feb.	272	114,473	4,404	127,011	60,015	37,191	4,853	55,385	26,165	177,518	139.8	—50,507	—60,095	—36,591	48,444
	2 mos.	272	274,932	9,191	302,283	98,388	81,461	12,111	116,772	34,529	337,107	111.5	—34,824	—54,057	—12,129	96,575
Kansas City, Mex. & Orient of Tex.	Feb.	465	218,644	9,978	244,732	84,721	56,188	7,692	76,653	Cr. 7,362	213,367	87.2	31,365	19,948	—22,136	38,807
	2 mos.	465	524,082	23,140	580,590	211,708	114,961	16,218	161,773	2,157	501,496	86.4	79,094	56,116	—34,132	59,999
Kansas City Southern	Feb.	784	1,201,800	78,630	1,425,269	180,530	234,880	59,982	461,929	80,789	1,018,149	71.4	407,120	289,384	243,562	328,271
	2 mos.	784	2,513,220	157,159	2,958,358	364,400	481,153	120,160	944,821	166,814	2,077,597	70.2	880,761	645,352	534,477	539,875
Texarkana & Ft. Smith	Feb.	81	212,049	6,267	239,992	21,443	20,799	7,156	58,434	11,446	120,854	50.4	119,138	102,296	66,662	37,930
	2 mos.	81	451,677	12,981	500,704	43,358	47,562	13,731	121,514	21,268	251,532	50.2	249,172	215,493	147,622	102,504
Kansas, Oklahoma & Gulf	Feb.	326	284,856	2,720	292,564	45,026	21,798	14,500	68,823	9,831	158,869	54.3	133,695	113,455	93,892	75,861
	2 mos.	326	577,582	5,472	594,028	85,305	55,652	27,543	137,122	20,247	323,711	54.5	270,317	229,838	186,454	138,060
Lake Superior & Ishpeming	Feb.	160	78,882	1,742	84,716	21,132	26,304	568	35,856	6,344	90,204	106.5	—5,488	—18,457	—25,007	—35,999
	2 mos.	160	136,924	3,659	148,166	48,250	56,862	1,068	71,745	13,302	191,227	129.1	—43,061	—69,000	—79,763	—76,223
Lake Terminal	Feb.	13	.....	.....	66,738	8,413	18,071	.....	45,162	2,468	74,134	111.1	—7,396	—12,921	—11,665	—10,756
	2 mos.	13	.....	.....	141,667	19,661	33,484	.....	91,723	4,455	149,323	105.4	—7,656	—17,706	—13,269	—22,685
Lehigh & Hudson River	Feb.	96	185,937	1,084	195,690	35,272	29,844	2,665	74,827	9363	151,971	77.7	43,719	32,083	16,207	24,857
	2 mos.	96	392,175	2,248	412,419	58,347	61,228	5,259	155,296	18,911	299,041	72.5	113,378	86,997	54,363	43,295
Lehigh & New England	Feb.	216	342,726	1,032	348,798	36,882	93,381	4,976	133,133	18,329	286,701	82.2	62,097	51,528	58,136	73,936
	2 mos.	216	717,667	2,090	729,593	75,501	190,079	17,901	277,408	35,606	596,495	81.8	133,098	111,349	122,513	81,244
Lehigh Valley	Feb.	1,361	4,456,121	474,892	5,356,647	291,673	1,153,240	135,266	2,287,552	140,140	4,036,660	75.4	1,319,987	994,749	861,325	231,419
	2 mos.	1,361	9,103,243	997,186	10,964,638	715,672	2,515,098	271,812	4,713,466	306,382	8,582,202	78.3	2,382,436	1,793,088	1,464,690	78,935
Louisiana & Arkansas	Feb.	301	282,181	9,697	299,610	44,876	50,047	11,786	81,254	12,292	200,689	67.0	98,921	65,125	50,108	59,152
	2 mos.	301	581,144	19,085	614,121	97,817	103,754	23,911	162,695	24,962	414,180	67.4	199,941	133,125	107,347	105,050
Louisiana Ry. & Navigation Co.	Feb.	338	255,799	8,143	275,026	51,014	31,780	12,091	116,641	11,892	223,650	81.3	51,376	30,097	3,857	5,964
	2 mos.	338	524,672	16,701	568,657	105,643	69,078	25,838	235,764	24,275	458,618	80.6	110,039	67,751	12,694	—25,486
Louisiana Ry. & Nav. Co. of Texas	Feb.	206	63,406	2,295	77,613	22,116	11,413	3,116	37,194	5,383	79,222	102.1	—1,609	—5,621	—16,775	—9,229
	2 mos.	206	139,638	5,416	160,185	41,739	24,292	6,322	75,681	10,771	158,805	99.1	1,380	—8,643	—32,517	—21,170

Revenues and Expenses of Railways

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Louisville & Nashville	Feb.	5,068	$8,730,879	$1,384,809	$10,833,718	$1,570,328	$2,343,474	$243,607	$3,822,247	$349,962	$8,379,869	77.3	$2,453,849	$1,815,549	$1,836,098	$1,545,578
	2 mos.	5,068	17,396,084	2,786,877	21,593,023	3,188,545	4,783,362	548,308	7,721,594	709,724	17,064,478	79.0	4,528,545	3,302,280	3,409,867	3,048,627
Louisville, Henderson & St. Louis	Feb.	199	199,137	33,372	248,174	38,310	46,432	7,527	109,861	16,508	220,036	88.7	28,138	14,307	7,239	39,040
	2 mos.	199	421,662	70,976	526,078	75,678	95,831	14,622	215,097	28,403	432,808	82.3	93,270	61,303	46,552	66,637
Maine Central	Feb.	1,122	1,164,537	218,941	1,518,155	198,436	265,013	14,599	612,831	46,245	1,136,498	74.9	381,657	304,755	258,217	295,375
	2 mos.	1,122	2,308,297	467,563	3,037,495	402,757	568,713	30,383	1,257,709	101,954	2,360,887	77.7	676,608	513,352	412,227	479,078
Midland Valley	Feb.	364	263,504	13,096	285,700	41,235	25,597	6,237	77,234	10,859	161,151	56.4	124,549	107,772	85,481	68,141
	2 mos.	364	554,255	25,682	599,029	84,189	54,997	12,187	159,835	22,973	334,104	55.8	264,925	231,342	185,775	144,798
Minneapolis & St. Louis	Feb.	1,627	998,749	76,443	1,136,789	111,746	197,955	34,860	573,909	62,489	980,773	86.3	156,016	94,502	37,796	80,180
	2 mos.	1,627	1,978,164	148,664	2,248,222	215,222	409,239	73,418	1,154,402	107,890	1,957,797	87.1	290,425	164,362	60,010	—13,930
Minneapolis, St. Paul & S. S. Marie	Feb.	4,380	2,588,573	339,873	3,159,990	409,595	710,620	69,598	1,424,488	116,319	2,745,151	86.9	414,839	197,713	90,436	221,885
	2 mos.	4,380	5,117,644	740,316	6,328,504	854,660	1,422,791	144,050	2,924,402	236,362	5,591,339	88.4	737,165	291,250	86,681	313,098
Duluth, South Shore & Atlantic	Feb.	573	321,796	50,781	393,867	48,012	61,232	6,300	180,343	11,174	308,619	78.4	85,248	53,247	34,066	31,628
	2 mos.	573	602,797	121,727	769,434	106,683	130,277	14,344	373,099	23,190	652,114	84.8	117,320	53,319	19,269	63,849
Spokane International	Feb.	165	72,788	7,886	133,610	19,630	11,022	3,255	51,175	5,831	91,986	68.8	41,624	36,160	27,845	10,938
	2 mos.	165	137,865	17,008	214,635	38,120	18,356	6,732	87,857	12,006	165,238	77.0	49,397	38,469	24,581	17,813
Mississippi Central	Feb.	161	117,098	5,795	127,442	17,153	23,386	9,328	35,642	8,454	93,963	73.7	33,479	24,388	24,807	35,287
	2 mos.	161	239,033	12,416	260,746	33,933	48,838	19,060	71,984	16,749	190,564	73.1	70,182	51,665	53,027	60,995
Missouri & North Arkansas	Feb.	364	123,426	10,107	142,790	23,432	23,178	10,179	57,720	8,055	123,173	86.3	19,617	17,126	5,026	—12,238
	2 mos.	364	243,155	19,871	280,481	55,691	45,586	19,581	123,675	15,952	261,372	93.2	19,109	14,127	—9,491	—41,870
Missouri-Kansas-Texas Lines	Feb.	3,188	3,297,161	537,142	4,159,620	483,367	840,010	112,772	1,309,328	161,285	2,928,833	70.4	1,230,787	964,950	784,172	826,875
	2 mos.	3,188	6,929,606	1,128,323	8,738,402	1,023,702	1,805,058	241,948	2,727,417	331,013	6,168,433	70.6	2,569,969	2,034,217	1,631,737	1,559,385
Missouri Pacific	Feb.	7,461	8,608,816	1,067,756	10,467,141	1,234,938	1,932,982	292,697	3,872,014	369,003	7,754,065	74.1	2,713,076	2,222,348	1,739,584	1,657,563
	2 mos.	7,461	17,470,482	2,238,739	21,325,104	2,668,945	3,980,510	611,005	7,935,688	753,463	16,009,120	75.1	5,315,984	4,369,140	3,452,573	3,019,743
Gulf Coast Lines	Feb.	1,026	1,140,844	139,737	1,344,003	222,804	240,403	43,663	401,660	61,792	961,742	71.56	382,261	336,263	239,654	264,523
	2 mos.	1,026	2,223,614	268,086	2,614,148	435,771	477,724	87,689	806,678	121,255	1,916,329	73.31	697,819	604,448	435,573	394,937
International-Great Northern	Feb.	1,159	1,157,868	183,128	1,484,135	251,929	265,687	40,656	592,635	70,711	1,223,721	82.45	260,414	217,227	109,417	112,846
	2 mos.	1,159	2,328,131	374,990	2,980,368	508,299	538,464	72,315	1,230,090	139,861	2,477,905	83.16	502,463	417,016	191,951	154,521
San Antonio, Uvalde & Gulf	Feb.	318	134,485	17,226	164,911	32,681	27,172	7,220	39,926	8,677	116,026	70.4	48,885	44,761	19,085	23,479
	2 mos.	318	256,433	35,002	315,319	74,658	53,029	13,945	83,000	16,956	242,372	76.9	72,947	64,656	13,950	25,977
Texas & Pacific	Feb.	2,015	2,880,162	438,944	3,536,285	548,570	650,720	81,167	1,222,016	117,642	2,613,745	73.9	922,540	720,366	470,413	686,977
	2 mos.	2,015	5,934,473	909,834	7,297,101	1,085,196	1,306,162	164,582	2,494,560	243,921	5,281,186	72.4	2,015,915	1,611,259	1,038,698	1,228,103
Mobile & Ohio	Feb.	1,159	1,136,136	76,375	1,285,929	195,217	249,782	54,496	498,277	45,389	1,040,263	80.9	245,664	157,314	111,492	174,899
	2 mos.	1,159	2,345,194	163,977	2,658,717	397,593	539,549	114,177	1,023,793	96,137	2,168,413	81.6	490,304	307,557	218,972	272,283
Monongahela	Feb.	171	595,951	11,488	611,691	80,000	75,000	980	162,138	12,024	329,725	53.9	281,966	256,945	163,127	109,202
	2 mos.	171	1,242,493	23,721	1,275,602	160,000	150,000	2,315	336,672	23,288	670,979	52.6	604,623	552,626	351,742	246,066
Monongahela Connecting	Feb.	6	.....	.....	191,229	20,653	32,739	300	90,243	3,923	147,858	77.3	43,371	34,559	29,432	15,419
	2 mos.	6	.....	.....	386,803	41,063	67,388	600	181,030	8,305	298,386	77.1	88,417	70,456	61,157	36,732
Montour	Feb.	56	162,514	.....	162,802	18,499	38,933	1,352	43,670	7,643	108,238	66.5	54,564	53,064	63,515	52,180
	2 mos.	56	327,561	.....	328,038	32,262	83,187	2,473	84,084	14,947	213,679	65.1	114,359	111,359	131,216	91,623
Nashville, Chattanooga & St. Louis	Feb.	1,259	1,346,016	266,082	1,783,002	186,309	341,034	90,112	628,681	79,721	1,335,809	74.9	447,193	365,163	386,136	197,617
	2 mos.	1,259	2,699,633	537,948	3,601,025	409,329	735,045	187,450	1,314,887	163,018	2,828,314	78.5	772,711	608,567	629,973	279,329
Nevada Northern	Feb.	165	88,084	6,576	107,685	12,269	5,290	1,393	18,206	5,317	42,618	39.6	65,067	51,353	50,173	21,837
	2 mos.	165	186,364	12,449	220,769	24,089	11,833	1,928	37,002	9,854	85,163	38.6	135,606	105,906	102,237	40,813
Newburgh & South Shore	Feb.	6	.....	.....	142,187	8,723	35,442	.....	58,489	5,898	108,552	76.3	33,635	12,450	20,596	31,860
	2 mos.	6	.....	.....	273,791	18,705	73,174	.....	123,569	12,200	227,648	83.1	46,143	10,985	28,815	15,995
New Orleans Great Northern	Feb.	276	217,453	14,158	238,395	38,891	33,567	12,620	75,876	11,489	172,443	72.3	65,952	49,259	26,862	51,842
	2 mos.	276	448,921	28,280	491,712	74,838	66,269	25,845	155,560	23,378	345,895	70.4	145,817	111,254	64,697	111,078
New Orleans Terminal	Feb.	20	1,615	.....	149,034	13,451	8,758	.....	57,870	1,644	81,723	54.8	67,311	60,381	48,389	35,192
	2 mos.	20	3,534	.....	281,084	34,001	15,798	.....	117,702	3,185	170,686	60.7	110,398	92,471	70,196	52,901
New York Central	Feb.	6,914	18,944,511	7,029,954	29,712,025	3,325,007	7,194,808	464,696	10,892,194	870,236	23,180,161	78.0	6,531,864	4,379,010	4,035,048	3,683,708
	2 mos.	6,914	37,703,450	15,430,866	60,767,515	6,796,246	14,319,065	936,361	22,476,310	1,794,087	47,318,549	77.9	13,448,966	9,026,080	8,452,278	7,320,224
Cincinnati Northern	Feb.	244	288,100	3,498	295,301	33,194	65,771	5,545	117,095	9,187	230,792	78.2	64,509	45,274	24,999	55,302
	2 mos.	244	579,426	8,266	597,273	75,178	137,880	11,800	234,731	20,129	479,719	80.3	117,554	79,952	43,036	59,479
Cleve., Cinn., Chicago & St. Louis	Feb.	2,397	5,633,319	1,102,406	7,285,464	605,478	1,644,282	139,242	2,729,518	219,035	5,420,197	74.4	1,865,267	1,415,032	1,313,929	1,125,077
	2 mos.	2,397	11,332,117	2,384,835	14,832,173	1,271,578	3,403,730	291,795	5,683,245	464,772	11,285,170	76.1	3,547,003	2,667,738	2,460,135	1,894,365
Indiana Harbor Belt	Feb.	117	.....	.....	980,932	108,000	106,302	4,952	443,277	24,190	698,277	71.2	282,655	229,941	200,644	141,161
	2 mos.	123	.....	.....	1,975,784	216,000	230,139	9,515	904,319	50,586	1,434,048	72.6	541,736	430,984	357,615	278,238
Michigan Central	Feb.	1,858	5,577,507	1,414,824	7,709,637	613,748	1,682,255	127,916	2,496,809	162,553	5,183,528	67.2	2,526,109	1,981,555	1,772,951	1,612,475
	2 mos.	1,858	10,641,010	3,210,353	15,301,303	1,274,156	3,367,879	258,395	5,137,268	342,425	10,592,281	69.2	4,709,022	3,634,296	3,267,078	2,987,998

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Pittsburgh & Lake Erie	Feb.	231	$2,316,672	$182,686	$2,606,858	$297,134	$989,816	$27,912	$885,211	$76,708	$2,285,426	87.7	$321,432	$167,432	$558,840	$593,267
	2 mos.	231	4,652,782	379,200	5,237,387	642,508	1,927,448	56,919	1,810,304	157,577	4,613,869	88.1	623,518	315,762	1,075,879	1,026,826
New York, Chicago & St. Louis	Feb.	1,690	4,171,342	118,737	4,424,585	430,476	809,408	121,497	1,575,299	140,243	3,086,460	69.8	1,338,125	1,093,990	884,042	552,585
	2 mos.	1,690	8,229,178	247,307	8,746,310	887,567	1,662,296	247,727	3,220,590	286,830	6,312,813	72.2	2,433,497	1,950,584	1,540,396	1,123,010
N. Y., New Haven & Hartford	Feb.	2,129	5,377,428	3,559,270	10,073,490	1,165,922	1,828,395	90,384	3,339,717	324,754	6,909,999	68.6	3,163,491	2,404,288	1,912,938	1,284,818
	2 mos.	2,129	10,980,308	7,366,166	20,668,383	2,359,018	3,861,851	196,441	6,972,682	684,921	14,422,000	69.8	6,246,383	4,744,524	3,781,070	2,603,057
New York Connecting	Feb.	20	206,463	.....	234,354	17,921	12,565	.....	32,651	1,491	64,628	27.6	169,726	131,726	110,309	102,546
	2 mos.	20	424,429	.....	477,488	225,943	2,268	.....	63,075	3,570	294,856	61.8	182,632	106,632	63,918	189,876
New York, Ontario & Western	Feb.	568	630,472	52,961	805,546	92,949	159,502	18,432	427,706	32,636	734,681	91.2	70,865	25,916	—19,618	—104,672
	2 mos.	568	1,307,401	109,855	1,679,094	195,385	358,479	38,070	885,102	68,737	1,555,925	92.7	123,169	33,168	—53,587	—205,187
Norfolk & Western	Feb.	2,240	8,562,504	380,582	9,225,145	1,294,892	1,733,928	112,420	2,235,165	239,306	5,632,198	61.1	3,592,947	2,791,975	3,088,752	1,864,071
	2 mos.	2,240	16,865,062	834,694	18,261,601	2,363,463	3,521,052	234,021	4,531,558	486,487	11,173,569	61.2	7,088,032	5,486,881	5,999,391	3,648,654
Norfolk Southern	Feb.	931	523,020	25,360	594,777	83,235	92,648	26,440	246,400	26,713	474,963	79.9	119,814	70,335	54,967	110,531
	2 mos.	931	1,063,251	59,209	1,211,745	166,160	200,578	53,154	507,086	57,860	976,085	80.6	235,660	134,718	105,205	221,264
Northern Pacific	Feb.	6,792	4,995,704	743,333	6,343,840	592,894	1,400,927	208,854	2,682,267	257,632	5,226,031	82.4	1,117,809	469,645	829,699	1,217,649
	2 mos.	6,792	9,972,966	1,546,131	12,752,968	1,244,421	2,937,274	450,509	5,397,583	525,352	10,719,782	84.1	2,033,186	731,690	1,507,338	1,903,184
Northwestern Pacific	Feb.	477	234,135	106,940	382,606	89,577	89,481	9,012	207,412	19,557	414,957	108.5	—32,351	—70,628	—73,190	—58,279
	2 mos.	477	463,024	215,672	767,083	194,669	179,727	16,293	438,751	40,636	869,756	113.4	—102,673	—179,189	—185,484	—164,682
Pennsylvania R. R.	Feb.	10,466	35,413,954	9,719,036	49,682,633	5,885,786	10,237,393	829,256	18,219,681	1,604,767	37,375,782	75.2	12,306,851	10,015,171	8,777,664	6,613,704
	2 mos.	10,466	71,240,234	20,741,714	101,347,437	12,190,588	21,597,913	1,706,908	37,414,002	3,196,581	77,448,886	76.4	23,898,551	19,367,515	16,748,058	12,749,939
Long Island	Feb.	404	824,606	1,788,633	2,758,438	363,939	449,508	13,925	1,221,858	59,515	2,109,666	76.5	648,772	567,168	436,105	101,266
	2 mos.	404	1,679,068	3,673,776	5,662,862	771,298	915,620	37,129	2,526,275	121,340	4,374,014	77.2	1,288,848	1,131,362	865,025	267,612
West Jersey & Seashore	Feb.	370	369,984	273,616	675,944	104,023	108,431	4,399	305,620	13,602	536,456	79.4	139,488	134,072	109,296	—449
	2 mos.	370	764,717	522,703	1,353,107	202,048	222,231	8,612	645,884	27,960	1,107,686	81.9	245,421	245,169	204,592	—41,438
Peoria & Pekin Union	Feb.	19	23,404	1,740	156,788	11,279	13,960	5,752	69,501	7,726	108,218	69.0	48,570	31,570	45,582	67,098
	2 mos.	19	45,886	3,796	309,785	22,260	25,824	11,335	140,656	16,116	216,191	69.8	93,594	59,594	89,102	130,133
Pere Marquette	Feb.	2,241	3,182,120	230,245	3,619,560	233,088	760,022	64,309	1,242,610	110,309	2,419,680	66.9	1,199,880	985,331	985,044	707,072
	2 mos.	2,241	5,972,276	502,852	6,899,865	444,288	1,516,193	128,722	2,510,318	223,704	4,841,893	70.2	2,057,972	1,627,943	1,463,110	952,821
Pittsburgh & Shawmut	Feb.	102	141,841	3,778	147,761	16,633	33,175	1,300	44,037	6,559	101,704	68.8	46,057	44,717	48,453	43,298
	2 mos.	102	296,741	7,649	307,919	35,086	60,635	2,987	89,987	17,222	205,917	66.9	102,002	99,277	103,259	114,423
Pittsburgh & West Virginia	Feb.	92	389,507	4,182	426,582	18,589	75,826	16,997	77,920	19,028	218,394	51.2	208,188	153,546	219,616	157,235
	2 mos.	92	784,176	8,686	861,927	39,392	140,151	33,865	158,057	40,571	433,659	50.3	428,268	317,043	449,941	295,223
Pittsburgh, Shawmut & Northern	Feb.	198	149,933	1,671	154,788	21,509	28,432	1,600	49,222	5,826	106,589	68.8	48,199	45,207	38,514	34,328
	2 mos.	198	299,405	3,559	310,619	47,983	57,164	3,558	99,789	11,613	220,107	70.9	90,512	84,684	71,148	54,945
Quincy, Omaha & Kansas City	Feb.	249	39,435	8,438	53,323	18,145	10,194	656	24,751	2,219	55,896	104.8	—2,573	—7,429	—9,834	—5,496
	2 mos.	249	78,570	16,784	106,637	32,078	17,721	1,407	50,859	4,606	106,558	99.9	79	—9,634	—14,502	—13,274
Reading	Feb.	1,460	6,606,432	588,693	7,690,661	902,675	1,800,659	85,207	2,913,934	211,556	5,942,747	77.3	1,747,914	1,358,100	1,377,234	1,059,793
	2 mos.	1,460	13,499,404	1,241,086	15,712,596	1,849,160	3,679,818	176,418	6,004,853	435,902	12,202,599	77.7	3,509,997	2,735,379	2,722,251	1,878,119
Atlantic City	Feb.	163	102,587	73,443	191,942	58,183	25,626	5,243	154,095	5,159	248,445	129.4	—56,503	—96,817	117,581	158,095
	2 mos.	163	208,664	151,458	392,095	118,869	57,492	8,585	325,981	10,838	522,031	133.1	—129,936	—210,550	—259,104	—352,673
Richmond, Fredericksburg & Potomac	Feb.	117	481,105	402,362	1,048,979	74,344	164,783	8,690	344,400	33,630	653,084	62.3	395,895	328,947	266,245	179,419
	2 mos.	117	927,229	790,647	2,043,181	154,558	323,309	17,859	686,565	72,862	1,301,926	63.7	741,255	611,898	499,082	297,552
Rutland	Feb.	413	250,457	85,018	440,381	78,862	93,819	9,735	186,118	15,684	385,581	87.6	54,800	32,665	40,422	56,064
	2 mos.	413	498,824	177,573	900,143	160,418	190,468	20,487	388,723	33,839	797,102	88.6	103,041	59,049	74,843	108,084
St. Louis-San Francisco	Feb.	5,304	4,619,727	837,351	5,901,095	674,834	1,133,662	125,971	2,185,205	221,229	4,305,882	72.97	1,595,213	1,290,048	1,375,592	1,383,483
	2 mos.	5,304	9,725,476	1,766,384	12,429,706	1,431,683	2,401,494	253,660	4,512,199	459,365	9,003,500	72.44	3,426,206	2,663,440	2,849,122	2,747,257
Ft. Worth & Rio Grande	Feb.	233	67,935	8,179	87,354	20,806	15,880	3,492	41,493	5,172	87,023	99.6	331	—4,063	—11,805	—15,617
	2 mos.	233	162,612	16,049	200,297	38,846	34,633	6,557	90,408	10,346	180,641	90.2	19,656	11,088	—5,812	—20,144
St. Louis-San Francisco & Texas	Feb.	154	126,642	12,212	144,164	21,536	21,701	5,270	53,884	6,926	109,238	75.8	34,926	31,791	5,929	—1,080
	2 mos.	154	262,532	24,132	298,155	44,171	46,799	10,229	120,084	15,126	236,325	79.3	61,830	55,801	345	671
St. Louis Southwestern	Feb.	939	1,330,049	53,903	1,451,537	130,605	228,293	69,718	396,315	64,023	897,765	61.8	553,772	496,676	374,950	369,217
	2 mos.	939	2,676,179	121,496	2,930,554	306,676	463,412	149,060	796,850	132,813	1,867,372	63.7	1,053,182	947,617	717,876	759,664
St. Louis Southwestern of Texas	Feb.	807	474,991	34,171	573,268	237,834	121,763	26,290	305,516	35,025	728,560	127.1	—155,292	—182,896	—166,500	473
	2 mos.	807	996,014	72,302	1,184,451	462,500	255,138	58,013	600,351	70,036	1,455,390	122.9	—270,939	—326,225	—276,328	—36,238
San Diego & Arizona	Feb.	156	85,603	25,561	112,003	19,417	16,606	4,431	30,106	8,053	80,123	71.5	31,880	25,993	26,034	25,928
	2 mos.	156	175,895	51,649	229,708	37,061	32,341	8,597	64,037	15,980	161,059	70.1	68,649	56,876	55,756	41,578
Seaboard Air Line	Feb.	4,490	3,792,738	1,043,666	5,290,851	625,803	906,385	202,669	1,782,860	170,666	3,790,457	71.6	1,500,394	1,153,187	969,398	934,219
	2 mos.	4,490	7,560,705	2,040,900	10,511,543	1,287,056	1,786,309	410,019	3,652,694	346,066	7,679,739	73.1	2,831,804	2,158,718	1,809,388	1,603,277
Southern Ry.	Feb.	6,730	8,346,754	1,689,519	10,860,342	1,710,991	1,923,635	240,207	3,757,523	349,055	8,052,659	74.1	2,807,683	2,085,251	1,924,969	2,029,835
	2 mos.	6,730	17,031,959	3,687,112	22,461,181	3,498,385	4,027,849	495,335	7,762,351	721,531	16,660,357	74.2	5,800,824	4,295,950	4,052,472	3,690,086

Revenues and Expenses of Railways

CONTINUED

	2 mos.	4,490	7,560,705	2,040,900	10,511,343	1,287,056	1,786,309	410,011	3,757,523	349,055	8,052,659	74.1	2,807,683	2,085,251	1,924,969	2,029,835
Southern Ry.	Feb.	6,730	8,346,754	1,689,519	10,860,342	1,710,991	1,923,635	240,207	3,757,523	349,055	8,052,659	74.1	2,807,683	2,085,251	1,924,969	2,029,835
	2 mos.	6,730	17,031,959	3,687,112	22,461,181	3,498,385	4,027,849	495,335	7,762,351	721,531	16,660,357	74.2	5,800,824	4,295,950	4,052,472	3,690,086

Revenues and Expenses of Railways

MONTH OF FEBRUARY AND TWO MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Alabama Great Southern	Feb.	314	$583,565	$120,942	$751,974	$133,508	$156,965	$21,738	$232,842	$22,954	$574,416	76.4	$177,558	$119,154	$136,580	$131,980
	2 mos.	314	1,211,902	252,861	1,568,117	277,526	332,727	45,273	478,076	45,964	1,192,268	76.0	375,849	250,670	300,267	267,436
Cinn., New Orleans & Tex. Pacific	Feb.	338	1,372,910	288,082	1,756,483	339,971	352,022	44,552	483,779	53,245	1,287,008	73.3	469,475	377,148	354,197	336,610
	2 mos.	338	2,767,350	612,304	3,567,657	682,291	725,207	92,870	975,510	108,466	2,612,719	73.2	954,938	756,265	739,011	636,961
Georgia Southern & Florida	Feb.	397	198,199	140,324	368,293	76,000	73,358	6,704	142,289	8,578	315,594	85.7	52,699	29,627	26,869	14,271
	2 mos.	397	397,496	271,484	728,927	157,509	152,545	12,464	290,542	16,976	646,673	88.7	82,254	36,242	35,810	40,050
New Orleans & Northeastern	Feb.	204	322,448	62,324	411,767	48,915	71,723	12,039	123,891	14,548	274,719	66.7	137,048	93,586	53,631	73,119
	2 mos.	204	686,943	125,034	867,261	108,301	152,133	25,159	257,160	28,873	578,876	66.7	288,385	192,430	117,419	117,594
Northern Alabama	Feb.	110	89,459	6,156	98,409	13,927	3,291	2,034	32,552	2,839	54,768	55.7	43,641	36,156	14,785	—2,875
	2 mos.	110	197,326	12,170	216,561	38,127	6,527	4,195	65,345	5,577	119,891	55.4	96,670	83,200	42,949	—15,924
Southern Pacific	Feb.	8,887	11,816,432	3,006,497	16,328,001	1,982,118	2,791,524	451,067	5,466,290	649,368	11,647,464	71.3	4,680,537	3,216,951	2,996,229	2,728,114
	2 mos.	8,887	23,768,814	6,155,384	33,085,992	4,179,602	5,835,683	884,791	11,386,469	1,335,388	24,266,168	73.3	8,819,824	6,012,971	5,494,972	4,625,922
So. Pacific Steamship Lines	Feb.	....	734,784	42,497	890,429	20,149	230,547	20,031	554,161	36,344	861,232	96.7	29,197	27,585	28,637	12,104
	2 mos.	....	1,417,856	76,315	1,724,663	40,390	459,339	40,173	1,125,491	69,780	1,735,173	100.6	—10,510	—13,536	—10,535	89,745
Texas & New Orleans	Feb.	4,729	4,507,697	881,938	5,815,919	837,981	1,203,891	189,495	1,974,480	261,475	4,497,116	77.3	1,318,803	982,241	671,732	323,914
	2 mos.	4,729	8,813,252	1,758,143	11,434,215	1,801,007	2,402,638	357,202	4,006,123	528,542	9,142,847	80.0	2,291,368	1,653,409	1,082,142	253,821
Spokane, Portland & Seattle	Feb.	554	515,762	71,855	644,524	59,398	89,747	9,458	204,640	24,021	390,314	60.6	254,210	168,878	153,498	121,950
	2 mos.	554	1,026,932	153,174	1,295,614	126,845	188,536	19,592	427,442	49,055	818,995	63.2	476,619	306,001	289,214	210,599
Tennessee Central	Feb.	296	225,239	15,869	257,409	52,242	41,220	8,743	91,943	12,447	206,515	80.2	50,894	45,129	26,115	27,176
	2 mos.	296	448,456	33,119	510,904	103,841	84,005	17,756	187,818	25,010	418,230	81.9	92,674	81,154	46,574	43,747
Terminal R. R. Assn. of St. Louis	Feb.	55	.....	.....	1,059,173	122,357	84,100	2,736	535,650	23,833	771,535	72.8	287,638	195,111	275,632	342,756
	2 mos.	55	.....	.....	2,110,706	240,459	169,936	5,838	1,035,287	54,269	1,511,948	71.6	598,758	408,524	577,727	706,731
Texas Mexican	Feb.	162	74,857	3,468	89,297	18,649	17,282	4,451	40,769	7,648	88,799	99.4	498	—4,502	—11,828	16,520
	2 mos.	162	167,547	6,878	199,014	36,697	35,545	7,788	84,508	15,060	179,598	90.2	19,416	9,338	—4,927	—9,367
Toledo, Peoria & Western	Feb.	239	181,641	785	187,881	13,494	18,322	10,924	65,658	8,127	116,525	62.0	71,356	62,475	52,113	11,241
	2 mos.	239	358,639	1,834	372,922	28,420	40,077	22,168	134,159	16,460	241,284	64.7	131,638	114,759	95,132	14,626
Toledo Terminal	Feb.	28	.....	.....	144,212	2,588	15,876	527	65,143	5,596	89,730	62.2	54,482	37,835	65,333	39,752
	2 mos.	28	.....	.....	270,370	7,336	32,671	1,141	121,870	12,442	175,460	64.9	94,910	61,597	114,964	96,316
Trinity & Brazos Valley	Feb.	367	161,804	5,296	174,323	28,311	31,079	5,137	76,000	12,007	150,038	86.1	24,285	16,337	—10,407	—14,820
	2 mos.	367	373,677	11,296	399,770	76,012	69,898	10,831	178,712	23,709	355,152	88.8	44,618	28,911	—31,151	—16,237
Ulster & Delaware	Feb.	128	20,730	2,892	55,336	10,705	15,265	944	34,804	4,764	66,482	120.1	—11,146	—14,246	—15,541	—20,091
	2 mos.	128	39,105	6,251	110,929	23,155	27,190	2,187	72,601	8,822	133,955	120.7	—23,026	—29,226	—31,630	—44,907
Union R. R. of Penna	Feb.	45	.....	.....	639,060	70,543	156,278	140	324,087	13,722	564,770	88.4	74,290	30,290	87,415	133,988
	2 mos.	45	.....	.....	1,336,088	140,943	319,832	301	671,522	28,183	1,160,781	86.9	175,307	115,307	228,368	251,301
Union Pacific	Feb.	3,765	6,993,774	951,976	8,629,295	632,157	1,846,205	160,242	2,524,811	330,896	5,629,053	65.2	3,000,242	2,275,923	2,163,003	1,924,991
	2 mos.	3,765	13,755,840	2,074,356	17,205,265	1,313,077	3,763,657	310,919	5,122,476	670,896	11,460,082	66.6	5,745,183	4,295,987	4,075,933	3,669,336
Oregon Short Line	Feb.	2,539	2,508,677	285,546	2,984,051	290,257	454,357	49,138	884,492	125,957	1,849,387	62.0	1,134,664	847,715	784,667	585,066
	2 mos.	2,539	5,024,942	608,398	6,033,726	606,357	920,939	99,430	1,804,765	260,685	3,804,557	63.1	2,229,169	1,655,466	1,534,087	1,104,719
Oregon-Wash. R. R. & Nav. Co.	Feb.	2,365	1,711,059	228,538	2,119,360	317,008	342,746	72,813	915,985	126,553	1,793,288	84.6	326,072	131,452	10,843	—39,314
	2 mos.	2,365	3,321,301	476,333	4,169,305	612,933	702,714	146,653	1,788,127	259,271	3,547,867	85.1	621,438	232,333	2,095	—211,360
Los Angeles & Salt Lake	Feb.	1,208	1,616,441	264,840	2,054,407	298,009	348,836	84,487	617,667	81,925	1,509,435	73.5	544,972	404,151	305,162	—814
	2 mos.	1,208	3,245,440	600,454	4,201,326	631,385	722,592	155,450	1,295,312	165,656	3,135,639	74.6	1,065,687	784,414	590,711	43,007
St. Joseph & Grand Island	Feb.	258	283,593	11,432	309,223	29,401	37,963	3,235	108,372	15,372	194,343	62.8	114,880	92,795	73,803	92,385
	2 mos.	258	569,600	23,228	623,040	58,901	82,317	6,276	215,561	31,198	394,253	63.3	228,787	184,144	148,013	157,286
Utah	Feb.	111	240,285	.....	240,569	31,414	45,421	375	54,556	5,570	137,336	57.1	103,233	85,892	79,026	34,946
	2 mos.	111	507,136	.....	507,543	64,664	92,084	760	106,014	10,922	274,444	54.1	233,099	197,066	176,954	82,753
Virginian	Feb.	545	1,541,800	32,138	1,645,929	140,359	306,356	12,948	316,745	31,389	806,939	49.0	838,990	663,990	742,376	582,138
	2 mos.	545	3,282,534	63,921	3,494,475	298,970	604,847	28,602	670,467	65,154	1,665,030	47.6	1,829,445	1,459,445	1,593,902	1,269,922
Wabash	Feb.	2,523	5,177,895	507,385	6,071,692	584,178	1,048,599	163,576	2,280,016	180,429	4,276,723	70.4	1,794,969	1,476,249	1,179,623	703,770
	2 mos.	2,523	9,995,418	1,097,067	11,860,010	1,165,186	2,074,008	328,297	4,663,847	377,592	8,649,179	72.9	3,210,831	2,602,999	1,996,805	1,274,837
Ann Arbor	Feb.	293	490,029	16,657	521,463	39,033	88,684	13,659	206,090	10,670	358,125	68.7	163,338	135,824	106,608	77,184
	2 mos.	293	926,454	35,168	989,239	87,023	183,408	27,613	408,648	22,824	729,453	73.7	259,786	204,778	153,748	107,106
Western Maryland	Feb.	875	1,380,039	23,526	1,465,213	223,598	276,981	40,071	419,348	41,012	1,002,978	68.5	462,235	382,235	413,675	409,815
	2 mos.	875	2,796,882	48,999	2,964,836	435,875	579,304	86,044	853,364	85,195	2,045,469	69.0	919,367	759,367	821,608	847,534
Western Pacific	Feb.	1,051	970,644	68,507	1,101,943	176,403	245,226	63,524	458,214	48,509	1,000,339	90.8	101,604	—1,431	67,018	47,636
	2 mos.	1,051	2,089,427	134,230	2,365,375	365,950	490,342	126,505	962,572	94,824	2,062,771	87.2	302,604	96,062	202,870	81,904
Wheeling & Lake Erie	Feb.	511	1,489,499	22,334	1,591,446	135,208	381,811	38,147	465,614	47,795	1,069,542	67.2	521,904	386,884	364,139	290,629
	2 mos.	511	2,977,728	48,375	3,208,629	288,892	792,749	74,884	950,812	95,701	2,205,385	68.7	1,003,244	728,221	683,018	452,583
Wichita Falls & Southern	Feb.	168	69,830	2,283	75,713	10,861	10,826	2,500	32,099	4,358	60,644	80.10	15,069	9,097	6,400	9,306
	2 mos.	168	149,505	3,623	161,188	24,200	22,572	4,961	51,092	9,710	112,553	69.82	48,653	37,203	30,678	13,882

News of the Week

(Continued from page 855)

cussions will be one on government influence on transportation and another on employer-employee relations. At the former will be discussed the amelioration of the handicaps to American shipping; rail-ocean rates and export markets; the Hoch-Smith resolution, and aeronautics as an aid to business. At the employer-employee relations round-table discussion the following will be discussed: Retirement plans; the value of extra incentive systems; current placement problems; and readjustment caused by mechanization.

Annual Meeting of Safety Section

The ninth annual meeting of the Safety Section of the American Railway Association, will be held at Claypool Hotel, Indianapolis, Ind., on April 23-25. The principal committee reports and papers, as shown in the program, are scheduled as follows:

Tuesday morning: Education, L. G. Bentley (C. & O.); Statistics, T. H. Carrow, (Penn.); the Mechanical Department, W. R. Lye, (N. Y. C.).

Tuesday afternoon: Clearing Wrecks, B. L. Barmen, (Ill. Cent.); Highway Crossing Accidents, H. A. Rowe (D. L. & W.); Accidents to Yard and Train Men, C. W. Nelson, (A. T. & S. F.); Train and Train Service Accidents, H. A. Parrish (C. & N. W.); Train Service Accidents (committee report) C. T. Bailey, (O. S. L.); Train Accidents (committee report) F. Hartenstien, (L. V.).

Wednesday morning: M. W. Accidents, D. A. Kuebler (K. C. S.) and Earl Stimson (B. & O.).

Wednesday afternoon: Non-Train Accidents, G. H. Warfel, (U. P.); round table discussion, led by F. W. Curtis, (D. & R. G. W.); E. J. McDonald, (Wabash) and J. W. Howard, (D. & H.).

Thursday morning: Shop Accidents, J. B. Irwin, (C. B. & Q.); round table discussion.

Other speakers expected to appear are W. H. Cameron, managing director of the National Safety Council; H. R. Safford, vice-president, Missouri Pacific; J. E. Taussig, president, Wabash; R. H. Aishton, president, A. R. A.; Dan Sowers, American Legion.

Santa Fe and T. & P. Vie for New Mexico Extension

Business interests in the Panhandle and the South Plains of Texas, in urging the construction of a branch of the Panhandle & Santa Fe from Seagraves, Tex., to Lovington, N. M., and Henry, 99 miles, were arrayed against other interests which urged that the Texas-New Mexico be allowed to construct an extension from Cheyenne, Tex., to Lovington, about 72 miles, at an Interstate Commerce Commission hearing at Lubbock, Tex., which closed on April 5. During the course of the hearing, which opened on April 1, H. C. Davis, examiner, heard more than 100 witnesses.

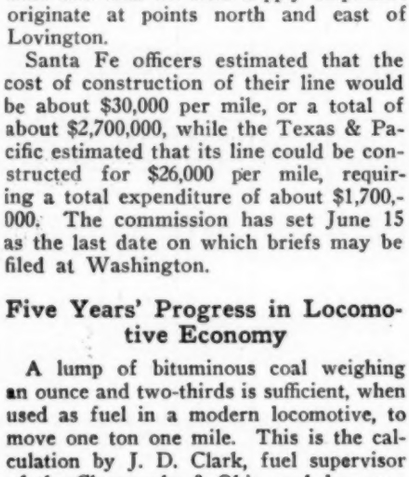
The two proposed lines would tap a valuable oil field and potash deposit in the southeastern corner of New Mexico, in Lea county. C. G. Staley, New Mexico state geologist, stated that the potash deposits show a potential supply of about 25,000,000 tons and are susceptible of commercial development.

Witnesses for the Texas-New Mexico, a subsidiary of the Texas & Pacific, said that the extension to Lovington from the South would provide Lea county cattlemen with more direct routes to markets in El Paso, Fort Worth and California. The Santa Fe claimed that livestock movements to markets are north and east out of this southwestern area and that oil field supply shipments originate at points north and east of Lovington.

Santa Fe officers estimated that the cost of construction of their line would be about $30,000 per mile, or a total of about $2,700,000, while the Texas & Pacific estimated that its line could be constructed for $26,000 per mile, requiring a total expenditure of about $1,700,000. The commission has set June 15 as the last date on which briefs may be filed at Washington.

Five Years' Progress in Locomotive Economy

A lump of bituminous coal weighing an ounce and two-thirds is sufficient, when used as fuel in a modern locomotive, to move one ton one mile. This is the calculation by J. D. Clark, fuel supervisor of the Chesapeake & Ohio, and, by courtesy of the Chesapeake & Ohio Employees' Magazine, there is shown here a picture of such a lump, placed side by side



Coal for a Ton Mile
Photograph, Actual Size, Here Reduced One-Half in Width and Height

with a lump weighing 41.17 per cent more. This larger lump would have been required on that road last year to move a ton a mile, if freight locomotive efficiency had been no greater in 1928 than it was in 1923.

In other words, the locomotives of the Chesapeake & Ohio, on the average, in 1928 used 102 lb. of coal in moving one mile each 1000 tons of freight (including cars and lading but excluding locomotive and tender), as compared with 144 lb. per thousand ton miles in 1923. If there had been no improvement in these five years, the coal needed in 1928 would have been 755,559 tons more than actually was used. Stating his comparison in another way, Mr. Clark calculates that, in 1928, one ton of coal was sufficient to move one ton 19,608 miles, whereas, in 1923, it moved that weight only 13,889 miles.

Program for the Annual Meeting of the Mechanical Division, A. R. A.

The sessions of the annual meeting of the Mechanical Division, A.R.A., to be held in Los Angeles, Cal., June 25-28, will be held in the meeting room of the Alexandria Hotel, which will also be the convention headquarters.

A local committee of western railway and railway supply representatives, headed by George R. Bierman, general passenger agent of the Union Pacific, has arranged a program of entertainment for the members and guests. Tickets for these entertainment features will be distributed to each member and the members of his family when he registers.

The members of the Railway Supply Manufacturers' Association are invited to attend the sessions and, with the members of their families, to participate in the entertainment.

The technical program for the four-day meeting is as follows:

Tuesday, June 25, 1929
9:30 a.m. to 5:00 p.m.

Invocation:
Welcome: Mayor of the City of Los Angeles
Address: P. Shoup, President, Southern Pacific
Address: R. H. Aishton, President, American Railway Association
Address: G. E. Smart, Chief of Car equipment, Canadian National and chairman, Mechanical Division, American Railway Association.
Action on Minutes of annual meeting of 1928
Appointment of committees on Subjects, Resolutions, Correspondence, etc.
Unfinished business.
New business
Report of General Committee
Discussion of reports on:
- Nominations
- Design of shops and terminals.
- Couplers and draft gears
- Specifications and tests for materials.
- Brakes and brake equipment.
- Wheels
- Lubrication of cars and locomotives

Wednesday, June 26, 1929
9:30 a.m. to 5:00 p.m.

Address: Interstate Commerce Commissioner, Hon. Frank M. McManamy.
Address: Charles Dillon, vice-president and managing editor of Transportation.
Discussion of reports on:
- Car construction
- Arbitration
- Prices for labor and materials
- Tank cars
- Loading rules
- Safety appliances (including report from H. A. Johnson, Director of Research)
- Apprentice training
- Automotive rolling stock
- Electric rolling stock

Thursday, June 27, 1929
This day is set aside for a trip to Catalina Island

Friday, June 28, 1929
9:30 a.m. to 12:30 p.m.

Discussion of reports on:
- Locomotive and car lighting
- Locomotive design and construction.
- Utilization of locomotives and fuel conservation
- Election of six members of the General Committee.

Adjournment

Special Trains

Several special trains are being arranged for. One of these on the Atchi-

son, Topeka & Santa Fe will leave Chicago at 10:30 p.m., Thursday, June 20, arriving at Los Angeles at 1:30 p.m., Monday, June 24. There will be a three-hour stopover at Albuquerque, N. M., to permit a visit to the Santa Fe locomotive and car repair shops. Sunday, June 23, will be spent at Grand Canyon.

The Chicago, Rock Island & Pacific will have a special train leaving Chicago at 11:30 p.m., Wednesday, June 19. It will stop over one day at Colorado Springs, leaving that place at 6:00 a.m., Saturday, June 22 and going to Salt Lake City, by way of the Denver & Rio Grande Western. A stopover will be made at Salt Lake City from 8:30 a.m. to 3:00 p.m., Sunday, June 23. The train will reach Los Angeles at 2:35 p.m., Monday, June 24, by way of the Union Pacific.

Two special trains will be operated over the Chicago & North Western-Union Pacific System. The first will leave Chicago at 8:30 p.m., Friday, June 21, arriving at Los Angeles at 2:30 p.m., Monday, June 24. The other special train over this route will leave Chicago at 8:30 p.m., Tuesday, June 18, and includes a three-day stopover at Zion National Park and Bryce Canyon National Park; also time for a sight-seeing trip at Salt Lake City. It will arrive at Los Angeles at 2:30 p.m., Monday, June 24.

A special train will also be operated from St. Louis to Los Angeles over the Missouri Pacific, Denver & Rio Grande Western and the Union Pacific. It will leave St. Louis at 2:02 p.m., Friday, June 21, arriving at Los Angeles at 2:30 p.m., Monday, June 24. A stopover of several hours will be made at Salt Lake City.

New York Savings Bank Law

Governor Roosevelt of New York has signed the Cheney bill as chapter 322 of the laws of 1929, amending the banking law in relation to investments by savings banks in bonds and obligations of railroad corporations. The obligations made legal for savings banks are those of railroad companies which earn a minimum of one and one-half times their fixed charges and have paid dividends at least 5 out of 6 years next preceding investment; or, if no such dividends have been paid, then income available for such fixed charges must have been not less than one and one-half times such charges for at least 9 out of 10 years.

The new law repeals all of chapter 449 of the laws of 1928 and enacts a new subdivision seven to section 239 of the banking law, as recommended by the Cheney Savings Bank Investment Committee and sponsored by the Savings Bank Association. The intention of the law is to simplify the language and the procedure.

The new law groups the obligations which may be purchased, namely:

1. Obligations issued, assumed or guaranteed as to principal and interest by endorsement.

2. Obligations for the payment of the principal and interest of which a railroad corporation such as is described in paragraph is obligated under the terms of a lease made or assumed; or

3. Equipment trust obligations in respect of which liability has been incurred.

The law provides for legal investment in such obligations of any railroad corporation incorporated under the laws of the United States or any state owning and operating not less than 500 miles of standard gage railroad, operating revenues from which during five of the six years preceding such investment shall have been not less than $10,000,000 per annum:

Provided, however (1) that in each year for at least five of the six fiscal years, and in the last fiscal year next preceding such investment, the amount of income of such railroad corporation available for its fixed charges, shall have been not less than one and one-half times such fixed charges; (2) that in each year for at least five of the six fiscal years next preceding such investment, such railroad corporation shall have paid dividends in each upon its capital stock equivalent to at lease one-fourth of such fixed charges, or if such railroad corporation shall not have paid such dividends, that the amount of income available for such fixed changes shall have been not less than one and one-half times such fixed charges for at least nine of the ten fiscal years, and in the last fiscal year, next preceding such investment; (3) that at no time within such period of six years such railroad corporation shall have failed regularly and punctually to pay the matured principal and interest of all its mortgage indebtedness; and (4) that the security, if any for such obligations shall lie in part within the United States.

There are other provisions intended to clarify the meaning of the law. The restrictions regarding percentages of investments by savings banks in the obligations of railroad securities remain the same in the new law signed as in the one it supersedes.

Revenues and Expenses for February

The net railway operating income of the class I railroads in February amounted to $84,770,143, which, for that month, was at the annual rate of return of 5.39 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In February, 1928, the net was $69,823,186, or 4.62 per cent.

Operating revenues for the month amounted to $475,112,179, an increase of 4 per cent, as compared with February, 1928. Operating expenses totaled $349,683,774, or an increase of 0.3 per cent. Class I railroads in February paid $31,432,166 in taxes, an increase of $2,296,315, or 7.9 per cent. This brought the total tax bill for the first two months to $62,709,417, an increase of $4,912,747 or 8.5 per cent.

Twenty three Class I railroads operated at a loss in February of which nine were in the Eastern district, two in the Southern and twelve in the Western.

For the first two months in 1929 the net railway operating income amounted to $161,887,917, which was at the annual rate of 5.48 per cent. During the corresponding period of 1928 the net amounted to $126,268,109 or 4.45 per cent.

Operating revenues for two months amounted to $961,514,217, an increase of 5.1 per cent. Operating expenses totaled $718,611,531, an increase of nine tenths of one per cent.

Net railway operating income by districts for the first two months with the percentage of return based on property investment on an annual basis was:

		Per cent
New England Region....	$6,894,501	6.55
Great Lakes Region.....	29,894,709	6.31
Central Eastern Region..	35,089,094	6.10
Pocahontas Region	14,048,871	9.84
Total Eastern District..	85,927,175	6.63
Total Southern District	22,695,719	4.38
Northwestern Region	6,943,072	2.87
Central Western Region..	32,719,700	5.74
Southwestern Region.....	13,602,251	4.16
Total Western District.	53,265,023	4.68
United States	$161,887,917	5.48

Class I railroads in the Eastern district for two months had a net of $85,927,175, at the rate of 6.63 per cent on their property investment. For the same period in 1928, their net was $59,560,789, or 4.79 per cent. Operating revenues for the two months totaled $482,021,029, an increase of 7.4 per cent, while operating expenses totaled $358,847,937, an increase of 1.3 per cent. For February the Eastern roads had a net of $44,906,758, compared with $31,772,735 in February, 1928.

Class I railroads in the Southern district for two months had a net of $22,695,719, or 4.38 per cent. For the same period in 1928, the net amounted to $18,903,575, or 3.75 per cent. Operating revenues for the two months amounted to $128,217,437, an increase of nine-tenths of one per cent, while operating expenses totaled $95,535,200, a decrease of 3.1 per cent. The net in February amounted to $12,041,148, while in the same month in 1928 it was $10,354,522.

Class I railroads in the Western district for two months had a net of $53,265,023, or 4.68 per cent. For the two months in 1928, they had a net of $47,803,745, which was at the rate of 4.38 per cent. Operating revenues in the Western district for two months amounted to $351,275,751, an increase of 3.8 per cent, while operating expenses totaled $264,228,391, an increase of 1.9 per cent.

For February, the net in the Western district amounted to $27,822,237. The net of the same roads in February, 1928, totaled $27,695,929.

Class I Railroads—United States

	1929	1928
Month of February		
Total operating revenues	$475,112,179	$456,844,227
Total operating expenses	349,683,774	348,698,061
Taxes	31,423,166	29,126,851
Net railway operating income	84,770,143	69,823,186
Operating ratio—per cent	73.60	76.33
Per cent return on property investment.	5.39	4.62
Two months ended February 28th		
Total operating revenues	$961,514,217	$914,475,693
Total operating expenses	718,611,531	712,288,474
Taxes	62,709,417	57,796,670
Net railway operating income	161,887,917	126,268,109
Operating ratio—per cent	74.74	77.89
Per cent return on property investment.	5.48	4.45

Traffic

The Southern Pacific, for the first time in its history, carried carload shipments of Easter lilies from California by freight to various points in the east, this year. The delicate flowers required special crating and packing.

All passenger train service on the Middle Tennessee & Alabama branch of the Nashville, Chattanooga & St. Louis between Fayetteville, Tenn., and Capshaw, Ala., 36 miles, was discontinued on April 8.

The Chicago & North Western has installed in the lounge cars of its North Western Limited an electrically operated device to purify the air within the car. It is also planned to install this equipment on the lounge cars of several other trains of that railroad.

Lake Cargo Tariffs Effective

The Interstate Commerce Commission refused to suspend the tariffs filed by railroads serving the "northern" coal district reducing the rates on lake cargo coal from the Fairmont and Connellsville and related districts, and the rates went into effect on April 1 and April 8. The Pittsburgh and Ohio operators, in asking the commission to suspend the rates, had taken occasion to urge the commission to investigate the entire matter of the "compromise" agreement between the northern and southern coal roads, which resulted in tariffs becoming effective on January 1 establishing a differential of 35 cents a ton in the rates from the northern field under those from the southern districts. They took the position that the new tariffs from the intermediate districts represented part of the agreement.

Great Lakes Advisory Board

The Great Lakes Regional Advisory Board held its sixth annual meeting at Toledo, Ohio, on April 3, with an attendance of about 800 shippers, business men and railroad representatives. The reports of the commodity committees as a whole show an expected increase of 9.6 per-cent in car loadings this quarter as compared with 1928. Shipments of potatoes are expected to increase 30 per cent; grain, 20½ per cent, ore, etc., 23.6 per cent; salt, 14.6 per cent and automobiles 12.6 per cent.

Fred M. Renshaw, traffic commissioner of the Buffalo Chamber of Commerce, was elected president. The general secretary is Frank H. Baer, Cleveland (Ohio) Chamber of Commerce.

C. G. W. Sells Airplane Tickets

The Chicago Great Western has inaugurated combined rail and air passenger service to St. Louis, Mo., and Cleveland, Ohio, from several points on its lines, including St. Paul, Minneapolis and Des Moines. The service is operated in conjunction with the Universal Air Lines, using tri-motored planes. Passengers leave Minneapolis on the Legionnaire at 7:45 p. m., arriving in Chicago at 8:15 a. m. where they may board an airplane at 9:45 a. m. to reach St. Louis at 1:00 p. m., or at 4:00 p. m. to reach Cleveland at 7:45 p. m. This schedule also provides for similar service from St. Paul and Rochester, Minn. Passengers from Des Moines leave that city at 9:00 p. m. on the Chicago Special, arriving in Chicago at 7:35 a. m. to connect with the same planes leaving for St. Louis and Cleveland. Marshalltown, Iowa and Waterloo are also included in this service. At Chicago motor coaches are provided to carry passengers from the Grand Central station to the Municipal Airport. The service to St. Louis is provided primarily for those who may desire to transact business in Chicago on their way to the former city. Through tickets are available with the air service to and from points beyond the Great Western lines.

Canadian Freight Traffic Increased 19 Per Cent in 1928

A statement issued by the Dominion of Canada Bureau of Statistics and covering all Canadian steam railways with operating revenues of over half a million dollars, shows that, while operating expenses for 1928 were heavier by $30,883,686 in 1928 than in 1927, that the total net operating revenues of the combined roads amounted to $120,019,800. This was an increase of $27,160,285 over the previous year.

Freight traffic on Canadian steam railroads was heavier in 1928 than in 1927 by 19.3 percent. The heavy carryovers of the 1927 grain crop and the record harvest of 1928 were large factors in this record traffic. The increase in wheat tonnage alone amounted to more than 5,000,000 tons. Mine products carried increased by 1,399,136 tons, forest products by 635,015 tons and manufactures and miscellaneous freight by 3,315,333 tons.

The number of passengers carried one mile was slightly greater than in 1923, the peak year. The average passenger journey was 81.3 miles as against 76.4 miles in 1927, demonstrating the growth of longhaul traffic.

The pay roll of the Canadian railways was higher in 1928 than in 1927 by $16,826,739 and the number of employes increased by 8,427. The considerable increase in the number of men employed is due largely to the building of the Hudson Bay Railway, which has recently reached tidewater at Fort Churchill, by the Canadian National through northern Manitoba and the barren lands.

N. E. Shippers' Advisory Board

The New England Shippers Advisory Board held its fourth annual meeting at Boston, Mass., on March 28, with an attendance of about 500. Wm. F. Garcelon was re-elected chairman. Besides the regular commodity reports, the meeting listened to brief addresses or remarks by M. J. Gormley, W. C. Kendall and George C. Randall of the American Railway Association; John J. Pelley, president of the New York, New Haven & Hartford; Charles W. Robie, vice-president of the Railway Express Agency and W. H. Day, manager of the Transportation Bureau of the Boston Chamber of Commerce.

The reports of the commodity committees in the aggregate show an expected increase in car loadings for the months of April, May and June, as compared with last year, of about five per cent. Automobiles, etc., are expected to increase by 20 to 25 per cent; machinery, 20 per cent; petroleum products, 18 to 20 per cent; and wire goods 10 to 15 per cent. The only important decreases anticipated are ice, 15 per cent; live stock, 10 per cent; and packing house products, 12 per cent.

A. P. Russell, executive vice-president of the New Haven, and president of the New England Transportation Company, highway subsidiary of the New Haven, discussing motor truck competition particularly in connection with the employment by manufacturers of trucking service to and from the New York boat lines, told the members that the New Haven was considering the question of itself going into motor truck operation.

A. R. A. Predicts Increased Freight

Freight traffic in 1929 is expected to be greater than in either of the two preceding years but slightly under the total in 1926, when the volume of business handled by the railroads was the heaviest on record, according to an estimate submitted at the regular spring meeting in New York on April 12 of the board of directors of the American Railway Association by the Car Service Division.

On the basis of cars loaded with revenue freight, the traffic during the current year is estimated at 52,553,813 cars, which would be a reduction of 545,006 cars or one per cent under the actual loading. An increase of 1.9 per cent over the actual loading in 1928 and 1.8 per cent over that in 1927. The estimate is based on the best information available from the various Shippers' Regional Advisory Boards, which now cover the entire country, and from private and governmental sources.

The railroads are in good physical condition this year to meet the anticipated heavy movement of traffic, having had on March 1 fewer locomotives in need of repair than on the same day in any of the previous six years. They had slightly more freight cars awaiting repairs on March 1 than on the same day in 1928 and 1927 but less than on March 1 in the previous four years. The railroads, however, for the most part are now using more powerful locomotives and freight cars which have a greater carrying capacity than in previous years.

Foreign

Disastrous Train Wreck in Roumania

Press dispatches of April 5 report the derailment of a passenger train on that day near Buzan, Roumania, resulting in 20 deaths and 60 injured, many of the latter being, it is said, fatal cases. Four coaches fell down a bank and were piled one on top of another.

Increased Passenger Rates in Austria

Increased passenger rates on short-haul traffic became effective on Austrian railways March 15 while it is planned to inaugurate a schedule of increased freight rates on May 1, according to recent reports to the United States Department of Commerce. The new passenger schedules apply to distances up to 300 kilometers or about 186 miles.

New Five-Car Train Ordered for the Pope

A private train has been ordered for Pope Pius, according to a recent dispatch from Rome to the Associated Press. It will consist of five coaches, the first of which will contain a room with the pontifical throne and a dining room, the second a chapel and bed room and the third, quarters for the papal court. Servants' quarters, baggage rooms and a small kitchen are arranged in the fourth and fifth cars. Two locomotives will be assigned to the train.

European Rail Manufacturers Renew Agreement

Renewal for a period of six years of the agreement among European rail manufacturers is expected according to a recent report to the United States Department of Commerce. The report also states that the renewal will include an accord between the Continental and British producers, the latter having made certain concessions.

Penalties for exceeding quotas, it is announced, will begin at 20 shillings. The European Rail Manufacturers' Association will meet in London during April.

Install All-Electric Diners On British Railway

A number of all-electric restaurant cars and kitchens have been recently put into service on the London & North Eastern. These cars, which are equipped throughout with electric equipment, including lighting and cooking apparatus, have been added to the services of four express trains of the company's lines. The company also plans shortly to introduce all-electric kitchen cars on the Hook of Holland and the Antwerp Continental boat expresses between Liverpool street Station, London and Parkeston Quay, and on the express services between Liverpool Street Station and Cromer and Yarmouth.

J. J. Mantell Appointed to Chinese Railway Post

J. J. Mantell, former vice-president of the Erie, has been appointed consulting manager of the Chinese railways. He will survey these roads for the Nationalist government with a view to their reorganization along American lines. A total of 12,000 miles of line will be included in the survey, among them the Chinese Eastern in Manchuria which is owned jointly by the Chinese and Russian governments.

Mr. Mantell with his staff of six American engineers expects to leave for China within a month.

New Paris-Madrid, Paris-Barcelona Express Service

In the presence of French and Spanish delegates and representatives of the Southern (of France) and the Northern (of Spain) railways, the inauguration took place recently of a new express train service between Paris and Madrid and Paris and Barcelona. The ceremonies took place at the international station at Canfranc. The new service between the French capital and the two Spanish terminals will be routed via Le Somport. A saving of three hours time will be effected between Paris and Madrid.

Argentine Lines Projected

Plans are being formulated by the Central Argentine for the construction of 390 miles of line to link up Villa del Rosario and Cordoba with the road's main line to Tucuman, according to a recent report to the Department of Commerce. This project is expected to cost about $21,840,000 while an expenditure of $36,000,000 is planned for the construction of another 680 miles of line, mostly in the northern part of the country.

In addition, the report states, $8,400,000 will be spent for the electrification of the suburban line from Buenos Aires to Tigre and $18,000,000 for grade crossing abolitions and increased trackage in Buenos Aires.

Work Progressing on Kenya & Uganda Railway

Work is now well under way on the Kenya & Uganda railway in Central Africa, a new line which when completed will extend for about 100 miles from Jinja in Uganda to Kampala in Kenya. The road will run through a thriving provincial community. The first sod was turned about the middle of December, 1928, when a large assembly of Europeans, Indians and Africans were present. The Kabaka of the province of Kenya turned the first spadeful of sod at a point about two miles distant from Kampala. A program of addresses included speeches by the governor of the provinces and the Provincial commissioner. It was predicted that Kampala was destined to become an important junction point and further plans were announced for extensions of the lines Westward.

Equipment and Supplies

Locomotives

THE CHICAGO ROCK ISLAND & PACIFIC has ordered 25 locomotives of the 4-8-4 type from the American Locomotive company. Inquiry for this equipment was reported in the *Railway Age* of April 6.

Freight Cars

THE PITTSBURGH STEEL COMPANY is inquiring for seven special flat cars of 50 tons' capacity.

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for from 40 to 50 side dump cars of 70 tons' capacity.

THE SOUTHERN PACIFIC has ordered 300 flat cars from its own shops. Inquiry for this equipment was reported in the *Railway Age* of March 16.

THE CINCINNATI, HAMILTON & DAYTON has ordered six Hart convertible ballast cars from the American Car & Foundry Company.

THE BALTIMORE & OHIO is inquiring for 2,000 steel hopper cars of 70 tons' capacity and 1,000 steel gondola cars, 50-ft. long of 70 tons' capacity. An inquiry for 100 underframes for cabooses has also been issued.

THE ERIE has placed orders for 2500 steel freight cars; the orders were divided as follows:

No.	Type	Capacity Tons	Builder
1,000	Hopper	70	Standard Steel
500	Auto-box	40	Am. Car & Fdy.
500	Box	50	Gen. Amer. Car
250	Gondola	70	Bethlehem Steel
250	Gondola	70	Greenville Steel

Inquiry for this equipment was reported in the *Railway Age* of March 2.

Passenger Cars

THE CHICAGO & EASTERN ILLINOIS is inquiring for two mail and smoking cars.

THE CHICAGO & NORTH WESTERN has ordered five passenger and baggage cars from the Pullman Car & Manufacturing Corporation.

THE ERIE has ordered 30 steel suburban coaches from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of March 9.

THE NATIONAL RAILWAYS OF MEXICO have ordered 15 narrow gage and 10 standard gage passenger cars from the Pullman Car & Manufacturing Corporation.

THE GREAT NORTHERN has ordered from the St. Louis Car Company one gas-electric rail motor car to be equipped with Mack 405 hp. power plant and Gen-

eral Electric Company electrical equipment.

THE NEW YORK CENTRAL has purchased 70 passenger cars, the orders for which were distributed as follows: 10 passenger and baggage cars from the Pressed Steel Car Company, 10 dining cars from the Pullman Car & Manufacturing Corporation, 20 baggage cars from the American Car & Foundry Company, 30 milk cars from the Merchants Despatch Transportation Company. Inquiry for this equipment was reported in the *Railway Age* of March 16.

Iron and Steel

THE LOUISVILLE & NASHVILLE has ordered 800 tons of structural steel for miscellaneous bridge work from the Virginia Bridge & Iron Co.

Machinery and Tools

THE INTERNATIONAL-GREAT NORTHERN has ordered one 25-ton 37-foot span crane from the Shaw-Crane-Putnam Machine Co.

THE CHESAPEAKE & OHIO has ordered 21 electric overhead cranes from the Whiting Corporation. These include one 250-ton, one 10-ton and 19, 15-ton cranes.

THE BALTIMORE & OHIO has ordered four 200-ton steel wrecking cranes to replace cranes which have become obsolete because of heavier power, and in addition one locomotive crane for maintenance work

THE MISSOURI PACIFIC has ordered from Manning, Maxwell & Moore, Inc., a 15-ton (with 5-ton auxiliary hoist) double cantilever gantry crane, for use in its shops at Sedalia, Mo.

THE DELAWARE, LACKAWANA & WESTERN, which was reported in the *Railway Age* of April 6 as about to enter the market for machine tools, is now inquiring for the following tools:

1 Electric bench grinder
1 Wheel press recording gage
1 25-ton overhead travelling crane
1 Electric crane truck
3 1-ton electric hoists
1 54-in. heavy horizontal milling machine
1 90-in. quartering machine
1 54-in. vertical turret lathe
2 48-in. radial drills
1 66-in. hydraulic forcing press 400 tons' capacity
1 No. 2 universal turret lathe
2 14-in. by 6-ft. engine lathes
1 14-in. ball bearing sensitive drill
1 1¼-in. automatic turret lathe
2 2A universal hollow hexagon turret lathes
1 Motor driven double end floor grinder
1 42-in. vertical turret lathe
1 72-in. plain radial drill
1 Horizontal milling machine
1 Heavy-duty portable cylinder joint facing machine
1 2-in. double head bolt threading machine
1 3⅛-in. by 36-in. hollow hexagon turret lathe
1 Internal grinder
2 Brass finishing turret lathes, 18-in. swing by 6-ft. bed
1 24-in. motor driven vertical drill press
1 No. 2 roller pipe cutter
1 ¼-in. to 4-in. pipe threading and cutting off machine
1 No. 3 core making machine
1 Bolt pointer ½ in. to 2 in. capacity
1 1¼-in. heavy duty upsetting and forging machine
1 2-in. heavy duty upsetting and forging machine
1 Heavy-duty production lathe
1 Double-end hot saw and burring machine
1 Motor driven double-end combination wet and dry grinder
1 32-in. heavy-duty crank shaper
1 60-in. plain radial drill
1 Hydraulic spring bending machine
2 Portable arc welding sets
1 30-in. by 14-ft. engine lathe
1 20-in. by 14-ft. engine lathe
1 18-in. by 10-ft. engine lathe
1 48-in. crank shaper

Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon April 26, for railway motor and multiple unit control equipment.

Signaling

DELAWARE, LACKAWANNA & WESTERN.—Division 6 of the Interstate Commerce Commission has issued a report approving, with exceptions, the installation of the automatic train-control device, continuous induction type, of the Union Switch & Signal Company, on the Scranton division.

THE INTERNATIONAL-GREAT NORTHERN (Missouri Pacific) has contracted with the General Railway Signal Company for the installation of automatic block signals on its line between Spring, Tex., and Percival Junction, 21 miles; and from Austin, Tex., to San Marcos, 36 miles. Color-light signals will be used.

THE DELAWARE & HUDSON has ordered from the General Railway Signal Company material for a four-lever control machine for installation at Albany, N. Y. The order includes four switch machines, four color-light signals and other material.

THE BEAUMONT, SOUR LAKE & WESTERN (Missouri Pacific) has contracted with the General Railway Signal Company for the installation of automatic block signals between Fullerton, Tex., and Gulf Coast Junction, 38 miles. Color-light signals will be used.

Dispatcher Control on Southern Pacific

The Southern Pacific has ordered from the Union Switch & Signal Company the materials for establishing a dispatcher control signaling system on its line, single track, from Sacramento, Cal., southward to Stockton, 48 miles. The new signaling is to cover a distance of 40 miles, from Brighton, (six miles from Sacramento) to El Pinal, which is near Stockton. The control machine will be in the dispatcher's office at Stockton, which is three miles from the controlled territory.

This line is the route of a heavy fruit traffic in the late summer, when there are about 50 daily train movements complicated by a large amount of switching and local work.

The machine will have 35 switch levers and 29 signal levers. The automatic train graph in the dispatcher's office will record movements at 33 points.

The order includes 30 dual control switch machines, 75 searchlight type dwarf signals and other searchlight signals; 35 color-light dwarf signals to be installed in connection with hand-operated switches, and other material.

Supply Trade

H. M. Schaab has been appointed manager of steel door sales of the **Truscon Steel Company,** Youngstown, Ohio.

The Schaefer Equipment Company will move its general offices on April 15, from the Oliver building to the Koppers building, Pittsburgh, Pa.

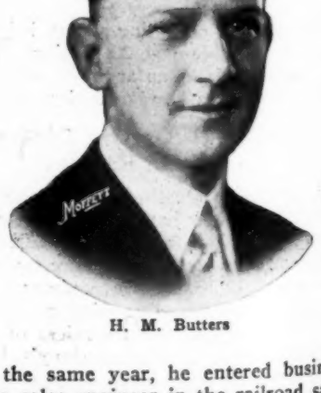
W. J. Denholm has been transferred from the Chicago office of the **Worthington Pump & Machinery Corporation** to Harrison N. J., as assistant to the manager of the Harrison Works.

A. R. Gelinas has been appointed agent for Ontario, Quebec and the maritime provinces for the **American Hoist & Derrick Company,** St. Paul, Minn. Mr. Gelinas' office is at 1434 St. Catherine street, West, Montreal, Que., Canada.

The Curtin-Howe Corporation, New York, has licensed the Pendleton-Gilkey Company, Minneapolis, Minn., to treat forest products of all kinds with the ZMA (Zinc-meta-arsenite) process, at its Spokane, Wash., plant.

A. L. Humphrey, president of the **Union Switch & Signal Company,** has been elected chairman of the board and **G. A. Blackmore,** vice-president and general manager, has been elected president, effective April 9.

The Federal Cement Tile Company, Chicago, has organized a railway sales department and has appointed as manager, **H. M. Butters,** formerly manager of the railroad sales department of Beaver Products, Inc. He was born in Chicago on July 24, 1890, and graduated from the University of Illinois in 1912.



H. M. Butters

In the same year, he entered business as a sales engineer in the railroad sales department of the Johns-Manville Corporation with headquarters at Chicago. During 1917 he served as manager of boiler and engine construction for the Emergency Fleet Corporation at Chicago, and after the war returned to the

Johns-Manville Corporation. He resigned in 1919 to become district sales manager of the western region for the Franklin Manufacturing Company at Chicago, which position he held until 1921 when he was appointed manager of the railroad sales department of Beaver Products, Inc. When this company was purchased by the Certain-Teed Company in April, 1928, he resigned to engage in roofing materials research work for various companies with which he has been occupied until his recent appointment.

J. F. Lincoln, who has been elected president of the **Lincoln Electric Company,** Cleveland, Ohio, was graduated from a course in electrical engineering

J. F. Lincoln

at Ohio State University in 1907. Soon thereafter he became a salesman for the Lincoln Electric Company, then being advanced to sales manager. In 1912 he was appointed general manager, later being elected vice-president, a position he held until his further election to the presidency of the Lincoln Electric Company.

Obituary

James B. Sipe, founder of James B. Sipe & Co., Pittsburgh, Pa., died at his home in Pittsburgh, on March 5.

Daniel B. Vail, for many years foreman painter of the Erie Railroad car shop at East Buffalo, N. Y., and for the last 18 years railroad sales representative for James B. Sipe & Co., Pittsburgh, Pa., died at his home in Buffalo on March 30.

William D. Hudson, of the engineering firm of Harland, Bartholomew and Associates, St. Louis, died on February 27. Mr. Hudson was born on April 14, 1880, in Green County, Ill., and was educated at Washington University and the University of Wisconsin. For a time he was assistant bridge engineer for the Missouri Pacific, and since 1923 served as a planning engineer on numerous railroad bridge, harbor and municipal improvement programs.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been let by the state highway department of Colorado for the construction of a subway under the tracks of this company at a point east of Manzanola, Colo., to the Driscoll Construction Company, Pueblo, Colo.

ATCHISON, TOPEKA & SANTA FE.—A contract has been let to the Union Bridge Company, Kansas City, Mo., for the erection of the steel superstructure of a double-track bridge over the North Canadian river at Oklahoma City, Okla. The bridge will comprise four 600-ft. steel truss spans.

ATLANTIC COAST LINE.—This company has awarded a contract to the York Construction Company, Raleigh, N. C., for the construction of a new warehouse at Jacksonville, Fla. The building will be two stories with a floor space of 50 ft by 200 ft. It will be of brick and mill construction with a composition roof.

BOSTON & ALBANY.—This company has awarded a contract to the New England Construction Company, Springfield, Mass., for the grading work on a highway and the raising of a bridge on its lines near Chester, Mass.

BOSTON & MAINE.—This company has awarded two contracts to the New England Construction Company, Springfield, Mass. The first is for the rebuilding of two bridges on its lines near Halcyon, N. H., and the second for the rebuilding of a bridge near Naukeag, Mass.

BOSTON & MAINE.—This company is planning the construction of a modern locomotive terminal to cost approximately $1,500,000, in its Boston, Mass., yards. The enginehouse will be equipped with a direct steaming system under which incoming locomotives will dump fires before entering. A large coaling station will also be constructed. This will be built of concrete with a steel overhead pocket of 2000 tons capacity, equipped with automatic hoisting machinery. The roundhouse will be about 550 ft. in diameter, with 50 stalls capable of housing the road's largest locomotives. In the center of the house a 110-ft. turntable will be installed. With the terminal will be connected a new power house, machine shop and office and new water, sand and boiler washing facilities.

CHICAGO & NORTH WESTERN.—A contract has been let to Peterson, Shirley & Gunther, Omaha, Neb., for the construction of an extension from Winner, S. D., to Wood, which includes grading, bridging and track laying. The construction involves a total expenditure of about $1,250,000.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—A contract has been awarded to the Roberts and Schaefer Company, Chicago, for the construction of a 600-ton reinforced concrete automatic electric coaling station at Linndale (Cleveland), Ohio.

EMERSON-CHURCHILL COLONIZATION RAILWAY.—This company, which is a subsidiary of the Emerson-Churchill Promotion Company, Ltd., has petitioned the Manitoba legislature for authority to construct a railroad from Emerson, Man., near the Minnesota-Manitoba border, through Waboden, Man., on the Hudson Bay Railway, to Fort Churchill on Hudson Bay, about 1,000 miles. The petition also asks for the right to construct elevators, warehouses, wharves and terminals at Fort Churchill.

ERIE.—This company will receive bids until April 22, for the elimination of a grade crossing on its lines at New Windsor, N. Y. Bids will be received until April 15, for the construction of a lateral highway on this road's lines near Kanona, N. Y. A contract has been awarded to the Robert Schaefer Company, Chicago, for the construction of a coaling station at Meadville, Pa.

GRAND TRUNK WESTERN.—A contract for the construction of the uncompleted section of a belt line around Pontiac, Mich., has been let to P. T. Clifford & Son, Valparaiso, Ind. The cost of the work, which involves the construction of 6.5 miles of double track, is estimated at $1,500,000.

NEW YORK, NEW HAVEN & HARTFORD.—This company has announced plans for the improvement of two yards on its lines at Providence, R. I., and at Cedar Hill, near New Haven, Conn., to cost approximately $1,750,000. The two improvement projects will include the installation of a complete system of car retarders in the yards, changes to the track system, grading of "humps," changes in signaling devices, lighting, etc. There will be 44 retarder units installed in the two classification yards at Cedar Hill, controlled by six towers, and 19 units at Providence, with two towers. At Cedar Hill 88 switches will be controlled from the towers while 34 switches will be controlled from the towers at Providence. The towers will be 20 feet in height and all towers in the respective yards will be connected with a loud speaker system. A teletype also will be installed in the towers to facilitate furnishing towermen with lists of cars in freight trains to be classified.

NEW YORK, NEW HAVEN & HARTFORD.—This company has authorized the replacement of east and west approach pile trestles with steel girder spans, and 348 ft. of earth fill on approaches to a bridge on its line near Mystic, Conn., at an estimated cost of $70,000. Authorization also has been given for the re-arrangement of tracks and platforms at the west end of its Back Bay passenger station in Boston, Mass., at an estimated cost of $80,000.

NORTHERN PACIFIC-OREGON-WASHINGTON.—The Northern Pacific and the Oregon Washington Railroad & Navigation Company have filed with the Interstate Commerce Commission an application for authority for joint construction of a 60-mile branch line in the Gray's Harbor district, Washington, extending from a connection with the Northern Pacific at Aloha north through the Olympic peninsula forest region. The Oregon-Washington now operates over the Northern Pacific between Aberdeen and Hoquiam, Wash., under contract and it is proposed that it shall have equal joint possession and use of the line from Hoquiam to Moclips. It is estimated that there will be tributary to the new line more than 28 billion feet of merchantable timber.

NORTHERN PACIFIC-UNION PACIFIC.—These railroads, contingent upon the approval of the Interstate Commerce Commission, plan the construction of an extension from Aloha, Wash., a point near Moclips, on the Grays Harbor branch of the Northern Pacific, to the south bank of the Hoh river, 60 miles. The cost of the line, which will require about two years to construct, because of the rugged character of the country through which it will pass, is estimated at $6,000,000. It is planned to locate the line along the westerly slopes of the Olympic mountains, tapping a section which has hitherto been inaccessible for settlement or logging operations. It is estimated that 28,000,000,000 board feet of merchantable timber, about 10 per cent of which is spruce available for airplane construction and other special uses, is standing in the territory tributary to the proposed line.

PENNSYLVANIA.—This road plans the construction of a new passenger station at Pittsburgh, Pa., which, according to plans now being prepared, will be located to face on Penn avenue between Eleventh and Thirteenth streets. The passenger improvements also will provide for additional tracks both eastwardly and westwardly from the station. New freight terminal facilities also will be constructed to take the place of the present Sixteenth street freight house, which must be removed to make room for the enlarged passenger station; and the Grant street freight house which has been removed to make room for a new postal building, and the Penn street freight house, which is to be removed to make room for a team yard. The new freight terminal facilities will consist of separate inbound and outbound houses of brick and concrete, with necessary tracks and paved driveways, and will be of sufficient capacity to handle the business now handled by the freight buildings which are to be removed.

PENNSYLVANIA.—This company has let a number of contracts as follows: To the John F. Casey Company, Pittsburgh, Pa., for the reconstruction of tracks, driveway paving, and inspection platform to complete the produce yard east of Sixteenth street in Pittsburgh and the grading, drainage, foundations, paving and track work in connection with the new freight houses fronting on Eleventh street to cost approximately $350,000; to the Daniel S. Bader Construction Company, Atlantic City, N. J., for the construction of an overhead bridge to eliminate a grade crossing on its lines at Mays Landing Court House, N. J., at an estimated cost of $42,000; to Sinclair & Grigg Company, Philadelphia, Pa., for the reconstruction of the New Holland turnpike bridge at Lancaster, Pa., to cost approximately $40,000; to Walter S. Rae, Pittsburgh, Pa., for the construction of a bridge over Market street at Lemoyne, Pa., estimated to cost $40,000; and to John F. Casey, Pittsburgh, Pa., for the re-construction and widening of an overhead bridge carrying the Lincoln highway over Radebaugh branch west of Greensburg, Pa.

NEW YORK CENTRAL.—This company has awarded a contract to H. H. Sherwin & Co., Inc., New York, for the construction of a new six-story automobile storage warehouse at 230th street and Kings Bridge road in New York. The building will cost about $500,000.

NEW YORK CENTRAL.—A number of contracts have been awarded by this company for work on its lines as follows: To the Watson-Stillman Co., New York, for the manufacture, delivery and installation of drop tables and hydraulic jacks in its shops at Rensselaer, N. Y.; to David Kramer, Inc., New York, for the equipment for a consolidated ticket office at Brooklyn, N. Y.; to the P. T. Cox Contracting Company, Inc., New York, and William Ballard, Inc., Syracuse, N. Y., for the elimination of grade crossings at Chappaqua and Sherrill, N. Y.

PENNSYLVANIA.—This company has awarded a contract to James Stewart & Company, Inc., New York, for the construction of its new 22-story office building which is to be located on Pennsylvania boulevard, between Sixteenth and Seventeenth streets in Philadelphia, Pa. The contract provides for completion of the building by March 1, 1930. It will cover an entire block and the specifications call for a floor space 397 ft. in length and 108 ft. wide. The total height will be 268 ft. Below the street level, the building will be a part of the Pennsylvania's new suburban station concourse. The building will be of modern construction, fireproof, with steel windows, metal trim and cement floors. The upper floors will have white marble wainscoting, with green marble base and marble flooring. The exterior will have a base of granite, with Indiana limestone above. Relief will be given by the use of cast aluminum or dark terra cotta in some of the spandrels. The main entrances, store fronts and all metal work in the first floor will be of bronze. Sixteen elevators will be installed. The contract for the steel work was previously awarded to the Bethlehem Steel Company.

SOUTHERN PACIFIC.—A contract for the grading in connection with the construction of a branch line from Knight's Landing, Cal., to a point near Boyer's Landing, 13.8 miles, has been let to W. A. Bechtel, San Francisco, Cal.

ST. LOUIS-SAN FRANCISCO.—A contract has been let to the Reid & Lowe Construction Company, Birmingham, Ala., for the construction of about two miles of industrial and interchange trackage at Memphis, Tenn., extending from the Yale Terminal south and west to a connection with the Illinois Central. The cost of this construction will be about $100,000.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—A contract has been let to the Roberts and Schaefer Company, Chicago, for the furnishing of a multiple pit three-track electric cinder handling plant for installation at St. Louis, Mo.

TREMONT & GULF.—A contract for the construction of a one-story general office building at Winnfield, La., has been awarded to Bailey & Brewer, Winnfield.

UNION PACIFIC-BURLINGTON. — These companies have reached an agreement for the improvement of their passenger terminal facilities at Omaha, Neb., which when completed will combine the two stations into one union station at a cost of about $4,200,000. The Union Pacific will build an entirely new station on the site of the present union station at a cost of $3,500,000, while the Burlington will remodel its present station at a cost of $700,000. The union station will accommodate the trains of the Union Pacific, the Chicago & North Western, the Chicago, Milwaukee, St. Paul & Pacific, the Chicago, Rock Island & Pacific, the Illinois Central, the Missouri Pacific and the Wabash. The Burlington station will be used by the trains of the Burlington and the Chicago Great Western. The number of tracks will be increased from 12 to 14 and the layout will be changed from lower to upper level trackage.

WICHITA FALLS & SOUTHERN.—Frank Kell, president of this company, plans the construction of a railroad from Wichita Falls, Tex., north and east to Waurika, Okla., and Ringling, about 75 miles.

THE INTERSTATE COMMERCE COMMISSION on April 8, granted the petition filed by the railroads in re Refrigeration charges on fruits, vegetables, berries, and melons from the South, for reconsideration and rehearing respecting the allowances for profit and for haulage of ice as elements of cost entering into the measure of stated refrigeration charges. It has refused to postpone the effective date of the order now entered in that case, and effective May 1, 1929, pending such reconsideration and rehearing. It has, however, shortened the time for the filing of refrigeration charges prescribed in its original order so that such rates will become effective on not less than five days' notice instead of not less than fifteen days' notice.

Railway Finance

ALABAMA GREAT SOUTHERN.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $2,566,343, equivalent to $11.44 a share on outstanding common and preferred stock. This compares with net income in 1927 of $2,621,764, or $11.69 a share. Both issues share alike after 6 per cent has been paid on both stocks. Selected items from the income statement follow:

ALABAMA GREAT SOUTHERN

	1928	1927	Increase or Decrease
Average mileage operated	314.99	314.99	.....
RAILWAY OPERATING REVENUES	10,110,310	10,359,494	— 249,184
Maintenance of way	1,613,945	1,589,464	24,481
Maintenance of equipment	1,966,522	1,974,576	— 8,054
Transportation	2,947,233	3,156,395	— 209,162
TOTAL OPERATING EXPENSES	7,163,284	7,333,077	— 169,793
Operating ratio	70.85	70.79	.06
NET REVENUE FROM OPERATIONS	2,947,026	3,026,417	— 79,391
Railway tax accruals	753,996	700,280	53,716
Railway operating income	2,538,423	2,607,308	— 68,885
Hire of equipment—Cr.	495,098	438,981	56,117
Joint facility rents—Cr.	148,864	156,437	— 7,573
NET RAILWAY OPERATING INCOME	not shown		
Non-operating income	584,823	625,461	— 40,638
GROSS INCOME	3,123,246	3,232,769	— 109,523
Rent for leased roads	19,699	20,338	— 639
Interest on funded debt	423,840	471,597	— 47,757
NET INCOME	2,566,343	2,621,764	— 55,421
Disposition of net income			
Dividends of 14 per cent on preferred stock (13% in 1927)	473,249	439,446	.....
Dividends of 14 per cent on ordinary stock (13% in 1927)	1,096,200	1,017,900	.....
Surplus for year carried to profit and loss	996,894	1,164,419	— 167,525

BELT RAILWAY COMPANY OF CHICAGO.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $187,200, the same as in 1927. Selected items from the income statement follow:

BELT RAILWAY COMPANY OF CHICAGO

	1928	1927	Increase or Decrease
RAILWAY OPERATING REVENUES	8,152,395	7,537,961	614,434
Maintenance of way	813,022	674,492	138,530
Maintenance of equipment	845,920	808,462	37,458
Transportation	3,739,797	3,374,614	365,183
TOTAL OPERATING EXPENSES	5,601,187	5,026,315	574,872
Operating ratio	68.71	66.68	2.03
NET REVENUE FROM OPERATIONS	2,551,208	2,511,646	39,562
Railway tax accruals	643,079	574,471	68,609
Railway operating income	1,907,859	1,936,765	28,907
Hire of freight cars—Cr.	244,141	254,006	— 9,865
Joint facility rents—Dr.	374,769	467,347	— 92,578
NET RAILWAY OPERATING INCOME	not shown		
Non-operating income	140,363	Dr. 5,642	146,005
GROSS INCOME	2,048,222	1,931,124	117,098
Rent for leased roads	1,696,850	1,635,598	61,252
TOTAL DEDUCTIONS FROM GROSS INCOME	1,861,022	1,743,924	117,098
NET INCOME	187,200	187,200	.....

BALTIMORE & OHIO.—*Unification.*—The Interstate Commerce Commission has authorized the American Short Line Railroad Association to intervene in the proceedings on this company's application for authority to acquire control of carriers in eastern territory, which it desires to have grouped with it as a system.

CHESAPEAKE & OHIO.—*Unification.*—The Interstate Commerce Commission has authorized the Bessemer & Lake Erie and the Pittsburgh, Bessemer & Lake Erie to intervene in the proceedings on this company's application for authority to acquire control of lines which it desires to have grouped with it in a system.

CHICAGO & NORTH WESTERN.—*Election of New Director.*—John Stuart, president of the Quaker Oats Company, Chicago, has been elected a director of this company to fill the unexpired term of Chauncey Depew, deceased.

CHICAGO GREAT WESTERN.—*New Directors.*—The stockholders at a meeting at Chicago on April 2 elected John W. O'Leary, vice-president of the Chicago Trust Company, Chicago, and P. G. Joyce, vice-president of the Standard Steel Car Company, Chicago, as members of the board of directors to succeed G. W. Wattles, Omaha, Neb., and C. T. Jaffray, president, Minneapolis, St. Paul & Sault Ste. Marie, Minneapolis, Minn. George H. Prince, chairman of the board, Merchants National Bank, St. Paul, Minn., and Milton Tootle, Jr., president, Tootle-Lacey National Bank, St. Joseph, Mo., were re-elected to the board. The four directors were elected with the unanimous vote of the stock represented at the meeting and voting. At a later meeting of the board, on April 6, Arthur W. Cutten, of Chicago, was elected as a director, replacing Mr. Prince. Messrs. O'Leary and Joyce were elected to represent the interests that recently organized the Bremo Corporation, a Delaware company. The Bremo Corporation is understood to have acquired a majority of the preferred stock. The stock of the Bremo Corporation, in turn, is understood to be owned principally or entirely by the traffic managers of a number of large industrial concerns in Chicago and elsewhere which ship a great deal of freight. The plan apparently is for these traffic managers to increase the amount of freight shipped over the Great Western by the industries they represent, with the obvious purpose of increasing its earnings and enhancing the value of their stock.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $1,372,602, as compared with net income in 1927 of $1,566,332. Selected items from the income statement follow:

CHICAGO, INDIANAPOLIS & LOUISVILLE

	1928	1927	Increase or Decrease
Average mileage operated	648.09	650.34	— 2.25
RAILWAY OPERATING REVENUES	18,381,006	18,542,197	—161,191
Maintenance of way	1,789,592	1,832,247	— 42,655
Maintenance of equipment	3,663,863	3,927,455	—263,592
Transportation	6,655,512	6,751,142	— 95,630
TOTAL OPERATING EXPENSES	13,185,808	13,571,861	—386,053
Operating ratio	77.53	78.05	— .52
NET REVENUE FROM OPERATIONS	5,195,198	4,970,336	224,862
Railway tax accruals	1,065,256	899,593	165,663
Railway operating income	4,129,322	4,068,105	61,217
Equipment rents, Dr.	753,265	571,832	181,433
Joint facility rents, Dr.	679,121	673,564	5,557
NET RAILWAY OPERATING INCOME	2,696,936	2,822,709	—125,773
Non-operating income	114,662	172,997	— 58,335
GROSS INCOME	2,811,598	2,995,706	—184,108
Rent for leased roads	37,243	38,957	— 1,714
Interest on funded debt	1,374,033	1,374,584	— 551
TOTAL DEDUCTIONS FROM GROSS INCOME	1,438,977	1,429,374	9,603
NET INCOME	1,372,620	1,566,332	—193,712

CINCINNATI, HAMILTON & DAYTON.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of 315 miles of electric railway line in Ohio, formerly owned or controlled by the Ohio Electric Railway, and to issue its securities for the purpose. It is proposed to change the name to Cincinnati & Lake Erie.

CLINTON & OKLAHOMA WESTERN.—*Bond.*—The Interstate Commerce Commission has authorized this company to issue one 6 per cent first and refunding mortgage bond, Series A, for $650,000, to be delivered to the Atchison, Topeka & Santa Fe at par in payment of certain of the Clinton company's bonds now held by the Santa Fe.

(Continued on page 884)

Annual Report

Southern Pacific Company—Report of the Board of Directors

NEW YORK, N. Y., April 4, 1929.

TO THE STOCKHOLDERS OF THE SOUTHERN PACIFIC COMPANY:

Your Board of Directors submits this report of the operations and affairs of the Southern Pacific Lines and Affiliated Companies for the fiscal year ended December 31, 1928.

Income Account

The following statements of income and of surplus show the income for the year and the accumulated surplus to the close of the year, accruing to Southern Pacific Company stock from the Transportation System and from all *separately operated Solely Controlled Affiliated Companies,* combined:

NET INCOME OF THE SOUTHERN PACIFIC LINES AND SOLELY CONTROLLED AFFILIATED COMPANIES, COMBINED, FOR THE YEAR 1928 COMPARED WITH THE YEAR 1927

	Year Ended December 31, 1928	+ Increase — Decrease Compared with 1927 Amount	Per Cent.
1. Net income of Transportation System	*$39,028,633.24	+$5,326,108.77	15.80
2. Net income of Affiliated Companies	*848,024.04	— 1,448,648.30	63.08
3. Net income of Transportation System and of all separately operated Solely Controlled Affiliated Companies, Combined	$39,876,657.28	+$3,877,460.47	10.77
4. Per cent. earned on average amount of outstanding capital stock of Southern Pacific Company:			
(a) From operations of Transportation System	10.48	+ 1.43	15.80
(b) From operations of Affiliated Companies	.23	— .39	62.90
(c) Total for the year 1928	10.71	+ 1.04	10.75
(d) Total for the year 1927	9.67	—	—

* Excludes all inter-company dividends.

SURPLUS OF THE SOUTHERN PACIFIC LINES AND SOLELY CONTROLLED AFFILIATED COMPANIES, COMBINED, TO DECEMBER 31, 1928

	Debit	Credit
1. Total corporate surplus at December 31, 1927	—	$480,186,890.62
2. Net corporate deficit, at date of acquisition, of properties acquired during the year	$1,077,586.25	
3. Credit balance transferred from income: Transportation System		$37,452,900.31
Affiliated Companies	—	816,204.04
4. Dividends paid: On capital stock of Southern Pacific Company:		
1½ per cent. paid April 2, 1928	$5,585,713.50	
1½ per cent. paid July 2, 1928	5,585,713.50	
1½ per cent. paid October 1, 1928	5,585,713.50	
1½ per cent. payable January 2, 1929	5,585,713.50	
Total Southern Pacific Company	$22,342,854.00	
On capital stocks of Transportation System Companies held by the public	30.00	22,342,884.00
5. Miscellaneous adjustments during the year	—	9,088,483.78
6. Credit balance December 31, 1928	504,124,008.50	
	$527,544,478.75	$527,544,478.75

Income Account of Southern Pacific Lines

The income account of the Transportation System (Southern Pacific Company and Transportation System Companies, combined, excluding offsetting accounts and inter-company dividends) for the year 1928 compared with the year 1927, was as follows, viz:

OPERATING INCOME

	Year Ended December 31, 1928	+ Increase — Decrease	Per Cent.
1. Railway operating revenues	$300,104,027.55	+$2,358,621.39	.79
2. Railway operating expenses	216,734,202.82	— 1,444,989.50	.66
3. Net revenue from railway operations	$83,369,824.73	+$3,803,610.89	4.78
4. Railway tax accruals	21,525,425.43	+ 311,913.08	1.47
5. Uncollectible railway revenues	75,568.19	— 56,555.50	42.80
6. Equipment rents—Net	7,018,072.68	+ 658,184.73	10.35
7. Joint facility rents—Net	*157,342.64	— 413,964.21	—
8. Net railway operating income	$54,908,101.07	+$3,304,032.79	6.40
NONOPERATING INCOME			
9. Income from lease of road	$95,442.10	— $139.85	.15
10. Miscellaneous rent income	1,691,917.26	— 85,337.13	4.80
11. Miscellaneous nonoperating physical property	91,344.35	— 12,834.97	12.32
12. Dividend income	†5,729,469.87	+ 1,793,446.77	45.56
13. Income from funded securities—Bonds and notes	2,905,280.70	+ 45,566.72	1.59
14. Income from funded securities—Investment advances	47,890.17	+ 7,361.57	18.16
15. Income from unfunded securities and accounts	1,460,047.38	+ 627,287.30	75.33
16. Income from sinking and other reserve funds	1,053,340.94	+ 48,171.96	4.79
17. Miscellaneous income	225,925.60	— 180,138.86	44.36
18. Total nonoperating income	$13,300,658.37	+$2,243,383.51	20.29
19. Gross income	$68,208,759.44	+$5,547,416.30	8.85
DEDUCTIONS FROM GROSS INCOME			
20. Rent for leased roads	$253,428.99	+ $2,801.03	1.12
21. Miscellaneous rents	790,339.52	+ 1,229.60	.16
22. Miscellaneous tax accruals	43,984.00	— 8,103.22	15.56
23. Separately operated properties—Loss	73,480.95	+ 17,546.00	31.37
24. Interest on funded debt—Bonds and notes	27,380,646.95	+ 273,141.13	1.01
25. Interest on funded debt—Nonnegotiable debt to affiliated companies	43,182.99	+ 20,717.73	92.22
26. Interest on unfunded debt	320,657.53	+ 116,936.59	57.40
27. Amortization of discount on funded debt	99,095.54	+ 25,777.56	35.16
28. Maintenance of investment organization	36,961.85	+ 2,645.13	7.71
29. Miscellaneous income charges	138,347.88	— 231,384.02	62.58
30. Total deductions from gross income	$29,180,126.20	+ $221,307.53	.76
31. Net income	$39,028,633.24	+$5,326,108.77	15.80
DISPOSITION OF NET INCOME			
32. Income applied to sinking and other reserve funds	$1,494,159.41	+ $54,296.89	3.77
33. Income appropriated for investment in physical property	81,573.52	— 44,744.59	35.42
34. Total appropriations	$1,575,732.93	+ $9,552.30	.61
35. Income balance transferred to credit of profit and loss	$37,452,900.31	+$5,316,556.47	16.54

* Credit. † Excludes all inter-company dividends.

The operating income of the Transportation System is dealt with further on under the heading "Transportation Operations —Southern Pacific Lines." The causes of the principal increases and decreases in nonoperating income and in deductions from gross income are explained below, viz:

Nonoperating Income

The increase of $1,793,446.77 in the account Dividend Income is due, principally, to increased dividends received from Pacific Fruit Express Company and from Standard Oil Company of California, which increases were partly offset by a decrease in the amount of dividends received from the Reward Oil Company.

Of the increase of $627,287.30 in the account Income from Unfunded Securities and Accounts, the sum of $502,343.84 represents an increase in interest on time and demand loans, due to the increased amount of such loans and to increased interest rates; and $103,828.72 represents an increase in interest on Federal income and other tax refunds received during the year.

The decrease of $180,138.86 in the account Miscellaneous Income is due, principally, to decrease in royalties received on oil from wells located on transportation property in the Spindletop, Texas, field.

Deductions from Gross Income

The increase of $273,141.13 in Interest on Funded Debt—Bonds and Notes is made up as follows:

	Principal	Interest
Bonds issued this year and the interest accrued thereon this year	$34,537,000.00	$1,178,680.10

	Principal	Interest
Bonds retired this year and the difference between the interest accrued thereon this year and a full year's interest last year..	*35,921,879.14*	*$1,127,780.74*
Decrease in outstanding bonds held by the public	*$1,384,879.14*	
Increase in interest accrued this year as compared with last year on the bonds so issued and retired		$50,899.36
Difference between a full year's interest accruing this year and the interest accruing last year on bonds issued last year as shown on page 15 of last year's report		610,253.97
Net increase in interest paid on bonds held in sinking funds		49,913.50
		$711,066.83
Less Interest accrued last year on bonds retired last year as shown on page 15 of last year's report		*$437,925.70*
Net increase		$273,141.13

* Items in italics represent decreases.

The net decrease of $1,384,879.14 in the principal of the outstanding funded debt will result in a decrease of about $190,000 in the annual interest payments.

The increase in the account Interest on Unfunded Debt is due, principally, to interest paid during the year on deferred payment of claims, which have been in dispute for several years.

The dividends paid for 1928 were appropriated from the profit and loss surplus and, therefore, do not appear in the income account. Payments for 1928 amounted to $22,342,884.00, compared with $22,342,929.00 for 1927. The figures for this year include $30.00, and those for last year, $75.00, representing dividends on stocks of Transportation System Companies held by the public.

	Year Ended December 31, 1928	+ Increase — Decrease	Per Cent.
25. Net railway operating income	$54,908,101.07	+$3,304,032.79	6.40
TRAFFIC STATISTICS (Steam Rail Lines)			
Freight Traffic			
26. Freight service train-miles	28,674,552	+ 1,027,286	3.73
27. Tons carried—revenue freight	61,259,597	+ 1,713,036	2.88
28. Ton-miles—revenue freight	15,695,443,557	+ 562,085,317	3.71
29. Loaded cars per train	27.97	+ .30	1.08
30. Net tons per train—all freight	613.14	— 6.25	1.01
31. Revenue per ton-mile—revenue freight	1.358 cents	— .010 cents	.73
32. Average distance carried—revenue freight (miles)	256.21	+ 2.07	.81
Passenger Traffic			
33. Passenger service train-miles	26,412,863	— 905,407	3.31
34. Passengers carried—revenue	12,932,911	— 970,566	6.98
35. Passenger-miles—revenue	1,737,915,936	— 67,790,955	3.75
36. Passengers per train—revenue passengers	63.72	— .61	.93
37. Passenger revenue per passenger-mile	2.755 cents	— .062 cents	2.20
38. Average distance carried—revenue passengers (miles)	134.38	+ 4.51	3.47

The following tabulation gives the transportation operations for the five years 1924, 1925, 1926, 1927, and 1928, compared with 1917, the last year prior to Federal control, and with 1921, the first complete year subsequent to Federal control, the figures being given in round thousand dollars:

	1928	1927	1926	1925	1924	1921	1917
Operating revenues	$300,104	$297,745	$298,801	$295,102	$291,727	$269,494	$193,971
Per cent. of 1917	154.72	153.50	154.04	152.14	150.40	—	—
Per cent. of 1921	111.36	110.48	110.87	109.50	108.25	—	—
Operating expenses	$216,734	$218,179	$215,595	$217,762	$214,812	$212,572	$120,601
Per cent. of 1917	179.71	180.91	178.77	180.56	178.12	—	—
Per cent. of 1921	101.96	102.64	101.42	102.44	101.05	—	—
Operating ratio	72.22	73.28	72.15	73.79	73.63	78.88	62.17
Net revenue from railway operations	$83,370	$79,566	$83,206	$77,340	$76,915	$56,922	$73,370
Per cent. of 1917	113.63	108.44	113.41	105.41	104.83	—	—
Per cent. of 1921	146.46	139.78	146.18	135.87	135.12	—	—
Railway tax accruals	$21,525	$21,214	$21,477	$21,340	$20,909	$15,539	$13,792
Per cent. of 1917	156.07	153.81	155.72	154.73	161.60	—	—
Per cent. of 1921	138.52	136.52	138.21	137.33	134.56	—	—
Net railway operating income	$54,908	$51,604	$55,797	$50,043	$50,475	$35,947	$62,253
Per cent. of 1917	88.20	82.89	89.63	80.39	81.08	—	—
Per cent. of 1921	152.75	143.56	155.22	139.21	140.42	—	—
Traffic units (ton-miles, all freight, plus three times passenger-miles)—millions	23,149	22,908	22,679	22,584	21,929	17,451	20,877
Per cent. of 1917	110.88	109.73	108.63	108.18	105.04	—	—
Per cent. of 1921	132.65	131.27	129.96	129.41	125.66	—	—

Transportation Operations—Southern Pacific Lines

The following table shows the Net Railway Operating Income and Traffic Statistics of the Transportation System for the year 1928 compared with those for the year 1927:

	Year Ended December 31, 1928	+ Increase — Decrease	Per Cent.
1. Average miles of road operated	13,599.69	+ 94.84	.70
NET RAILWAY OPERATING INCOME			
Railway Operating Revenues			
2. Freight	$222,360,880.87	+$5,744,246.83	2.65
3. Passenger	50,353,632.20	— 2,887,296.09	5.42
4. Mail and express	12,184,801.38	+ 428,050.56	3.64
5. All other transportation	8,808,333.75	— 603,792.03	6.42
6. Incidental	7,399,352.36	— 213,053.34	2.80
7. Joint facility—Credit	307,803.86	— 90,846.34	22.79
8. Joint facility—Debit	*1,310,776.87*	— 18,688.20	1.45
9. Total railway operating revenues	$300,104,027.55	+$2,358,621.39	.79
Railway Operating Expenses			
10. Maintenance of way and structures	$38,753,847.86	—$2,218,242.45	5.41
11. Maintenance of equipment	51,676,503.65	+ 945,197.01	1.86
12. Total maintenance	$90,430,351.51	—$1,273,045.44	1.39
13. Traffic	7,245,258.66	+ 459,716.08	6.77
14. Transportation	104,182,759.26	— 305,914.55	.29
15. Miscellaneous operations	4,961,450.49	— 237,287.40	4.56
16. General	11,408,543.92	+ 131,094.46	1.16
17. Transportation for investment—Credit	*1,494,161.02*	— 219,552.65	17.23
18. Total railway operating expenses	$216,734,202.82	—$1,444,989.50	.66
19. Net revenue from railway operations	$83,369,824.73	+$3,803,610.89	4.78
20. Railway tax accruals	$21,525,425.43	+ $311,913.08	1.47
21. Uncollectible railway revenues	75,568.19	— 56,555.50	42.80
22. Railway operating income	$61,768,831.11	+$3,548,253.31	6.09
23. Equipment rents—Net	7,018,072.68	+ 658,184.73	10.35
24. Joint facility rents—Net	*157,342.64*	— 413,964.21	—

* Credit.

As has been stated in reports for previous years, the Transportation Act of 1920 provides that the railways shall receive a fair return upon the aggregate value of railway property held for and used in the service of transportation, such fair return being 5¾ per cent., as last fixed by the Interstate Commerce Commission, under authority of the Act. Notwithstanding a steady increase in the volume of traffic handled, and the marked gain in operating efficiency as reflected in net revenue from railway operations, the existing rate structure, during each year since enactment of the Transportation Act, has failed to give your Company the fair return contemplated by the Act, the rate of return upon the book value of road and equipment of the lines constituting the Transportation System having been as follows:

1921	3.36%
1922	4.29%
1923	4.81%
1924	3.99%
1925	3.77%
1926	3.98%
1927	3.59%
1928	3.76%
Average return for 8 years	3.94%

The total Railway Operating Revenues for 1928, amounted to $300,104,027.55, and were the largest in the Company's history, exceeding the previous high record established in 1926 by $1,303,029.49, and exceeding last year by $2,358,621.39. This was the result of an increase of 562,085,317 ton-miles, or 3.71 per cent., over the record established last year, in the volume of revenue freight carried by your lines. This increase in the volume of freight carried, resulted in an increase of $5,744,246.83 in freight revenue, which was partly offset by a decrease of $2,887,296.09 in passenger revenue, due, principally, to automobile competition, and by a net decrease of $498,329.35 in other operating revenues, the result, principally, of a decrease in the earnings of tank steamers.

The increase in operating revenues was accompanied by a decrease of $1,444,989.50 in operating expenses, an increase of $311,913.08 in taxes, and an increase of $187,665.02 in equipment and joint facility rents and other charges, the result being an increase of $3,304,032.79, or 6.40 per cent., in Net Railway Operating Income.

On the Pacific Lines, freight revenues increased $5,442,603.10, or 3.53 per cent. This increase resulted from increased tonnage of nearly all products of agriculture, except oranges and barley;

[Advertisement]

increased tonnage of forest products; and increased tonnage of manufactures and miscellaneous commodities, partly offset by a decrease in the tonnage of mineral products. There was a decrease in the orange crop which caused a decrease in revenue of about $800,000. On the other hand there was an increase in the apple crop which brought a substantial increase in revenue. Other fruit crops were also greater, and the increased tonnage resulted in increased revenue, notwithstanding a 7½ per cent. reduction in rates to transcontinental points, effective February 10, 1928, on all deciduous fruits except apples, which caused a decrease in the revenue from grapes, although the tonnage handled was greater than in 1927. Freight revenue was also increased by a heavy west-bound movement of corn. These conditions, together with greatly improved crops of canteloupes, watermelons, sugar beets, and fresh vegetables (particularly lettuce), account for the increased revenue from agricultural products. The increase in revenues from forest products is the result of a more stabilized condition of the lumber industry; an improved demand for lumber in the East; and a large increase in the box shook movement, caused by the increased production of fruits, vegetables, and melons. The increase in revenue from manufactures and miscellaneous commodities is the result, principally, of an increase in the tonnage of automobiles and parts, the production of automobiles in 1928 having exceeded that of 1927 by approximately 950,000 cars and trucks; of an increase in the tonnage of gasoline, brought about, principally, by the increased production and distribution of automobiles; and of a large increase in the tonnage of potash fertilizer originating, principally, at Trona, California. The decrease in the tonnage of mineral products was due, principally, to a decrease in coal shipments from Dawson, New Mexico, to the Chicago, Rock Island & Pacific Railway, for locomotive use; and to a decreased movement of coal from Utah to California, caused by producers not making the usual price reductions on coal for summer storage.

On the Texas and Louisiana Lines, freight revenues increased $666,099.81, or 1.26 per cent. This increase was the result, principally, of increased tonnage of agricultural products, practically all commodities under this classification, except bananas, showing gratifying increases, due, principally, to larger crops of cotton, rice, melons, and potatoes, in the territory served by these lines, and to increased tonnage of fruits, fresh vegetables, and other perishables from California and from the Rio Grande Valley. The decreased movement of bananas is due to the fact that a large proportion of this tonnage formerly received at Gulf ports for the West, is now moving via the Panama Canal. There was an increase in the tonnage of automobiles and parts, due to increased production; and an increase in the tonnage of brick, cement, tile, and other manufactures, due to increased building activities and to generally improved business conditions. The above mentioned increases were partly offset by a decrease in the tonnage of animal products, due to a shortage of cattle which caused higher prices for meat and packing house products, thus decreasing the demand therefor; by a decrease in the tonnage of forest products, due to increased use of substitutes and of fir from the Northwest; by a decrease in the tonnage of petroleum and gasoline, due to shifting of trade territory and to pipe line and truck competition; and by decreased tonnage of iron and steel articles and machinery, due, principally, to decreased construction of pipe line and oil tank facilities.

On the Southern Pacific Steamship Lines, freight revenues decreased $364,456.08, or 3.84 per cent. This decrease is due, principally, to a decrease in the tonnage of cotton and cotton linters, the result of a short cotton crop in Texas and Louisiana last year, and of the strike in the New England textile mills; to Panama Canal and tramp steamer competition on railroad ties; and to the after effects of the flood, last year, in the lower Mississippi Valley.

Passenger revenues decreased $2,887,296.09, or 5.42 per cent., of which a decrease of $1,840,742.20 allocated to the Pacific Lines, and a decrease of $1,158,949.21 to the Texas and Louisiana Lines, such decreases being partly offset by an increase of $112,395.32 on Southern Pacific Steamship Lines. While the decrease on the rail lines is attributable in part to the competition of the Panama-Pacific Line which, in January, 1928, established a steamship passenger service between Atlantic and Pacific ports, via the Panama Canal; and to increased travel to Europe, which has diverted tourists from the Pacific Coast; the major part of the decrease is due to the more extensive use of private automobiles and to the continued and increased competition of motor coach lines, which, through coordination and consolidation of services are reaching out for transcontinental and other long haul traffic. The increase of $112,395.32 on Southern Pacific Steamship Lines is attributable to the placing in service during 1928 of the new S. S. "Dixie," of 12,440 tons displacement, which has attracted considerable new business owing to her superior accommodations.

The following tabulation, giving for the past five years the fluctuations in gross passenger revenue, contrasted with the fluctuations in gross revenues other than passenger, indicates the extent to which automobile competition has affected the passenger business of your lines:

Year	Gross Passenger Revenue: For the Year	Gross Passenger Revenue: Decrease During Year	Gross Revenues Other Than Passenger: For the Year	Gross Revenues Other Than Passenger: Increase During Year
Year ended December 31, 1923	$62,158,876	—	$225,045,759	—
Year ended December 31, 1924	$58,818,668	*$3,340,208*	$232,908,352	$7,862,593
Year ended December 31, 1925	56,292,247	*2,526,421*	238,809,507	5,901,155
Year ended December 31, 1926	55,262,330	*1,029,917*	243,538,668	4,729,161
Year ended December 31, 1927	53,240,928	*2,021,402*	244,504,478	965,810
Year ended December 31, 1928	50,353,632	*2,887,296*	249,750,395	5,245,917
Average per year for the five years	54,793,561	*2,361,049*	241,902,280	4,940,927

The gross revenues of your lines from all business, other than passenger, increased from $225,045,759 for the year 1923, to $249,750,395 for the year 1928. This is an average increase per year for the five years, of $4,940,927, and represents a steady increase in the traffic handled, implying a condition of prosperity, which, ordinarily, would indicate that there should be a corresponding proportionate increase in passenger revenue. As will be seen, however, passenger revenue, instead of increasing, has shown a steady decline, decreasing from $62,158,876 for the year 1923, to $50,353,632 for the year 1928, or an average decrease for each year of the five year period of $2,361,049. As indicated in the annual reports for the years under consideration, this decline is due, chiefly, to the increasing inroads of motor coach and other automobile competition. To meet this condition, and to effect certain economies in train service, your Company caused the incorporation, in April, 1927, of the Southern Pacific Motor Transport Company, which commenced operations last year by the establishment of certain motor coach lines, as set forth on page 24 of last year's annual report. Since its establishment last year this service has been actively extended, which matter is dealt with under the heading, "Southern Pacific Motor Transport Company," further on in this report.

All Other Transportation Revenue decreased $603,792.03, or 6.42 per cent. This is the result, principally, of a decrease in the revenue of Southern Pacific Steamship Lines, due to falling off in the demand for tank steamers for transportation of commercial oil and to decreased rates on the tonnage handled. This decrease in the revenue of the Steamship Lines was partly offset by increased revenues of the rail lines from switching and from the operation of automobile ferries.

Incidental Revenue decreased $213,053.34, or 2.80 per cent., due, principally, to abnormal revenues last year for detouring trains in the flood districts of Louisiana, and to credit adjustments of miscellaneous rentals last year.

Maintenance of Way and Structures decreased $2,218,242.45, or 5.41 per cent. This decrease is due, principally, to the completion in the early part of last year of the work, begun in 1926, of bringing certain portions of your line up to main line standard, to fit them for use as a part of through traffic routes established through the construction of new lines; to a decrease in the charge to operating expenses on account of retirements in connection with additions and betterments, which is the result of the large expenditures for improvements to the property in previous years; to a decrease in tie renewals, brought about by the constantly increasing percentage of treated ties in the track; and to decreases in prices of maintenance materials. These decreases were partly offset by increases in the wages paid to maintenance forces. The following table, giving the principal items of materials used in repairs and renewals during the past six years, shows that the property has been maintained up to your Company's usual high standard:

	Material Used in Repairs and Renewals					
	1928	1927	1926	1925	1924	1923
New steel rail, track miles	506.77	536.82	510.14	349.09	403.32	458.12
Ties, number	4,289,056	4,431,318	4,832,239	4,767,408	3,973,715	3,971,158
Ties, number per mile	214	225	248	252	222	245
Tie-plates, number	6,981,084	6,442,358	7,516,596	6,162,239	5,485,332	5,390,530
Piling, lineal feet	666,291	403,417	489,580	883,017	766,208	825,745
Lumber, feet b.m.	23,540,807	24,057,955	27,528,359	37,661,011	32,023,097	26,463,926

[Advertisement]

Maintenance of Equipment increased $945,197.01 or 1.86 per cent., which is the result, principally, of the increase in the volume of freight traffic handled by your lines.

Traffic Expenses increased $459,716.08, or 6.77 per cent., due, principally, to increases in the expenses of outside agencies, in advertising, and in expenses of industrial and development bureaus.

Transportation Expenses decreased $305,914.55, or .29 per cent., which was made up of an increase of $211,855.70 on the rail lines and a decrease of $517,770.25 on the Steamship Lines. The increase on the rail lines was caused, mainly, by increases aggregating $1,433,000 in the pay of yardmen and trainmen, due to an increase of 3.71 per cent. in the ton-miles of freight traffic handled and to increases in the rates of pay (including back pay for the year 1927 for locomotive firemen); and by a decrease of $1,038,000 in the cost of fuel for locomotives, due to the decreased price of fuel and to the saving in fuel consumption. The constant campaign carried on for years to reduce fuel consumption in locomotives, has been reflected by a gradual but large reduction in the amount of fuel used in proportion to the ton-miles of traffic moved. The reduction in pounds of fuel used per 1,000 gross ton-miles in 1928, compared with 1927, amounted to 1.22 per cent. in passenger service, and 2.80 per cent. in freight service. The value of the economy realized in 1928, compared with 1927, amounted to $456,920, and in 1928 compared with 1913, to $12,158,588. The following table shows results obtained in fuel economy in 1928, compared with the preceding two years, and with the year 1913:

LOCOMOTIVE FUEL PERFORMANCE

	1928	1927	1926	1913	Comparison of 1928 With 1927	Comparison of 1928 With 1926	Comparison of 1928 With 1913
Pounds of fuel per 1,000 gross ton-miles:							
Passenger service	124.03	125.56	126.35	206.67	— 1.22%	— 1.84%	—39.99%
Freight service	116.52	119.88	124.67	192.83	— 2.80%	— 6.54%	—39.57%
Value of fuel saved in							
1928 over 1927							$456,920
1928 over 1926							1,043,644
1928 over 1913							12,158,588

The decrease in Transportation Expenses of the Steamship Lines was the result, principally, of a decrease in the operation of tank steamers.

Miscellaneous Operations decreased $237,287.40, or 4.56 per cent., due, principally, to decreased dining car operations resulting from decreased passenger travel.

General Expenses increased $131,094.46, or 1.16 per cent., due, principally, to increased pension and relief department expenses of $104,000 and to an increase in valuation expenses of $76,000.

Railway Tax Accruals increased $311,913.08, or 1.47 per cent., due to increased income taxes and to increased rates and assessments for local and state taxes.

Capital Stock—Southern Pacific Lines

The decrease during the year in capital stocks of Southern Pacific Company and Transportation System Companies *held by the public* amounted to $600.00, as follows:

Capital stocks of Transportation System Companies, acquired from the Public $600.00

Funded Debt—Southern Pacific Lines

To provide for the construction and acquisition of new rolling stock, an equipment trust, known as "Southern Pacific Company Equipment Trust, Series K," was created, and an issue of $4,815,000, par value, of Four and One-Half Per Cent. Equipment Trust Certificates authorized, all of which were issued during the year, pursuant to authority of Interstate Commerce Commission's order dated August 14, 1928, in Finance Docket No. 7062. The certificates are dated August 1, 1928; they mature serially, in lots of $321,000 on August 1 of each year from 1929 to 1943, both inclusive; and have attached dividend warrants entitling the holders to dividends at the rate of 4½ per cent. per annum from August 1, 1928, payable semi-annually on February 1 and August 1. In accordance with the terms of the trust all certificates were guaranteed by the Southern Pacific Company.

On January 26, 1928, the Executive Committee of the Southern Pacific Company authorized the issue of $29,400,000, par value, of Forty-Year Four and One-Half Per Cent. Gold Bonds, to provide funds for the retirement of a like amount of Twenty-Year Five Per Cent. (Collateral Trust) Gold Bonds, which latter bonds were called for redemption on May 1, 1928. All the bonds so authorized were issued during the year, pursuant to authority of Interstate Commerce Commission's order dated February 23, 1928, in Finance Docket No. 6722. By issuing $29,400,000 of Four and One-Half Per Cent. Bonds, to retire a like amount of Five Per Cent. Bonds, a considerable reduction in fixed charges will be effected. The new bonds are dated March 1, 1928, are payable on March 1, 1968, and bear interest at the rate of 4½ per cent. per annum from March 1, 1928, payable semi-annually on March 1 and September 1.

The net decrease during the year in funded debt of Southern Pacific Company and Transportation System Companies *held by the public* amounted to $1,384,879.14, as follows:

FUNDED DEBT RETIRED DURING THE YEAR		
Southern Pacific Company Equipment Trust Certificates maturing during the year, paid off		$5,520,600.00
Southern Pacific Company Twenty-Year Five Per Cent. (Collateral Trust) Gold Bonds, called for redemption May 1, 1928		29,400,000.00
Alamogordo & Sacramento Mountain Railway Company Thirty-Year First Mortgage Five Per Cent. Bonds, purchased from the public and held alive in treasury of Southern Pacific Company		118,000.00
Central Pacific Railway Company Three and One-Half Per Cent. Mortgage Bonds:		
Retired from proceeds of sale of lands	$436,000.00	
Retired by sinking fund	25,000.00	461,000.00
Bonds of El Paso & Southwestern subsidiary companies, acquired from the public during the year in exchange for an equal amount of El Paso & Southwestern R. R. Co. First and Refunding Mortgage Five Per Cent. Bonds owned by Southern Pacific Company, pursuant to El Paso & Southwestern Refunding Plan approved by Interstate Commerce Commission, December 26, 1923		322,000.00
Other funded debt held by the public retired during the year		100,279.14
Total funded debt held by the public retired during the year		$35,921,879.14
Less **FUNDED DEBT ISSUED DURING THE YEAR**		
Southern Pacific Company Four and One-Half Per Cent. Equipment Trust Certificates, Series K, issued during the year to provide for the construction and acquisition of new rolling stock	$4,815,000.00	
Southern Pacific Company Forty-Year Four and One-Half Per Cent. Gold Bonds, issued during the year to provide funds for the retirement of a like amount of Twenty-Year Five Per Cent. (Collateral Trust) Gold Bonds which were called for redemption May 1, 1928	29,400,000.00	
El Paso & Southwestern Railroad Company First and Refunding Mortgage Five Per Cent. Bonds delivered to the public during the year, in exchange for an equal amount, par value, of bonds of El Paso & Southwestern subsidiary companies, in accordance with El Paso & Southwestern Refunding Plan, as explained above	322,000.00	
Total funded debt issued to the public during the year		34,537,000.00
Decrease in funded debt held by the public		$1,384,879.14

Investment Assets—Southern Pacific Lines

The following is a brief description of the investment assets of the Transportation System, reported in the balance sheet, viz:

INVESTMENT IN TRANSPORTATION PROPERTY	$1,458,369,269.86
Book value of investment in transportation property carried on the books of the companies comprising the Transportation System, consisting of 13,634 miles of first main track, 972 miles of additional main tracks, 5,895 miles of yard tracks and sidings, the Company's terminals at Galveston, a ten-story office building in San Francisco, 2,427 locomotives, 2,805 passenger-train cars, 82,469 freight-train cars, 5,713 company service cars, 23 ocean steamships, 2 river steamships, 13 automobile ferry boats, 14 passenger ferry and car transfer boats, 11 tugs, 73 barges, and 20 other vessels, the whole forming a transcontinental system extending from New York via New Orleans and Galveston, to San Francisco, California, and to Portland, Oregon, with a line extending from Ogden, Utah, to San Francisco, California.	
SINKING FUNDS	21,351,455.82
Sinking funds for the redemption of outstanding funded debt, consisting principally of $19,700,000, par value, bonds of Transportation System Companies, $1,838,000, par value, bonds of other companies, and $272,143.79 cash in hands of Trustees.	
MISCELLANEOUS PHYSICAL PROPERTY	2,940,553.85

[ADVERTISEMENT]

BALANCE SHEET OF SOUTHERN PACIFIC LINES

Southern Pacific Company and Transportation System Companies, Combined

ASSETS—DECEMBER 31, 1928, COMPARED WITH DECEMBER 31, 1927, EXCLUDING OFFSETTING ACCOUNTS

Assets	December 31, 1928	+ Increase — Decrease
INVESTMENTS		
Investment in road and equipment	$1,457,765,340.83	+$25,446,588.36
Improvements on leased railway property	603,929.03	+ 53,099.47
Sinking funds	21,351,455.82	+ 1,082,151.29
Deposits in lieu of mortgaged property sold	2,220,650.46	+ 609,036.54
Miscellaneous physical property	2,940,553.85	— 91,206.09
Investments in affiliated companies:		
Stocks	367,381,808.72	— 1,236,596.01
Bonds	148,359,675.22	— 314,036.58
Stocks, Bonds } Cost inseparable	54,774,260.15	+ 477,100.00
Stocks, Bonds, Advances } Cost inseparable	2,249,825.00	+ 2,249,825.00
Notes	24,419,757.93	— 343,624.09
Advances	45,914,019.83	+ 3,752,570.82
Other investments:		
Stocks	61,878.12	— 22,634.74
Bonds	2,576,751.85	— 6,400.00
Notes	557,179.85	+ 127,646.03
Advances	43,126.29	+ 5,739.67
Miscellaneous	1,177,395.08	+ 92,208.62
Total	$2,132,397,608.03	+$31,881,468.29
CURRENT ASSETS		
Cash	$24,449,427.17	+ $394,872.56
Demand loans and deposits	10,617,501.41	+ 1,596,687.85
Special deposits	46,598.60	— 45,153.96
Loans and bills receivable	762,298.72	+ 43,954.46
Traffic and car-service balances receivable	3,467,770.41	+ 441,624.39
Net balance receivable from agents and conductors	2,907,409.85	— 79,136.80
Miscellaneous accounts receivable	10,638,079.29	+ 3,382,577.53
Material and supplies	33,154,663.74	— 3,395,167.53
Interest and dividends receivable	2,687,794.31	+ 112,414.08
Rents receivable	5,000.00	—
Other current assets	1,846,093.98	+ 1,701,323.38
Total	$90,582,637.48	+ $4,153,995.96
DEFERRED ASSETS		
Working fund advances	$136,390.78	+ $26,840.88
Insurance and other funds	35,810.00	+ 10,450.00
Other deferred assets	2,626,168.47	+ 287,840.00
Total	$2,798,369.25	+ $325,130.88
UNADJUSTED DEBITS		
Rents and insurance premiums paid in advance	$208,217.07	+ $67,368.87
Discount on capital stock	3,813,600.00	— 175,000.00
Discount on funded debt	3,281,296.83	+ 847,204.77
Other unadjusted debits	10,296,725.16	— 343,466.86
Securities issued or assumed — Unpledged (a)	2,179,575.00	—
Securities issued or assumed—Pledged (a)	101,250.00	—
Total	$17,599,839.06	+ $396,106.78
Grand total	$2,243,378,453.82	+$36,756,701.91

(a) Excluded from total assets, and a corresponding amount excluded from outstanding funded debt, in accordance with regulations of the Interstate Commerce Commission.

LIABILITIES—DECEMBER 31, 1928, COMPARED WITH DECEMBER 31, 1927, EXCLUDING OFFSETTING ACCOUNTS

Liabilities	December 31, 1928	+ Increase — Decrease
CAPITAL STOCK		
Southern Pacific Company	$372,380,905.64	
Transportation System Companies	397,891,900.00	
Total	$770,272,805.64	
Held by the public	$372,402,165.64	— $600.00
Held within the system	397,870,640.00	— 137,400.00
Total stock	$770,272,805.64	— $138,000.00
Premium on capital stock of Southern Pacific Company	$6,304,440.00	—
Total	$776,577,245.64	— $138,000.00
GOVERNMENTAL GRANTS		
Grants in aid of construction	$502,601.87	+ $152,847.44
LONG TERM DEBT		
Funded debt unmatured:		
Southern Pacific Company	$238,836,885.00	
Transportation System Companies	497,188,969.19	
Total	$736,025,854.19	
Held by the public	$604,432,747.26	— $1,384,879.14
Held within the system	131,593,106.93	+ 515,466.68
Total funded debt	$736,025,854.19	— $869,412.46
Nonnegotiable debt to affiliated companies:		
Open accounts	52,264,373.78	+ 5,682,964.61
Total	$788,290,227.97	+ $4,813,552.15
CURRENT LIABILITIES		
Loans and bills payable	$40,000.00	+ $21,284.95
Traffic and car-service balances payable	4,514,406.96	— 769,630.20
Audited accounts and wages payable	16,856,184.14	+ 1,060,600.02
Miscellaneous accounts payable	1,533,560.39	+ 77,564.03
Interest matured unpaid	264,626.55	— 9,090.50
Interest payable January 1st	3,793,162.50	— 7,460.00
Dividends matured unpaid	39,363.21	— 8,928.00
Dividends payable January 1st	5,585,713.50	—
Funded debt matured unpaid	81,000.00	— 9,000.00
Unmatured interest accrued	6,792,963.22	+ 286,496.31
Unmatured rents accrued	167,735.82	+ 22,910.72
Other current liabilities	957,819.59	+ 140,116.42
Total	$40,626,535.88	+ $804,863.75
DEFERRED LIABILITIES		
Other deferred liabilities	$353,034.87	+ $46,583.62
UNADJUSTED CREDITS		
Tax liability	$8,650,175.14	+ $90,826.22
Insurance and casualty reserves	3,282,326.21	+ 162,209.01
Accrued depreciation—Road	2,799,040.92	+ 42,013.69
Accrued depreciation—Equipment	113,714,185.63	+ 9,768,346.65
Other unadjusted credits	40,312,641.76	— 1,803,457.69
Total	$168,758,369.66	+ $8,259,937.88
CORPORATE SURPLUS		
Additions to property through income and surplus	$9,596,724.00	+ $292,102.63
Funded debt retired through income and surplus	24,628,246.05	— 237,272.47
Sinking fund reserves	20,576,844.10	+ 1,095,980.94
Appropriated surplus not specifically invested	3,818,177.83	—
Total appropriated surplus	$58,619,991.98	+ $1,150,811.10
Profit and loss—Balance	409,650,445.95	+ 21,666,105.97
Total corporate surplus	$468,270,437.93	+$22,816,917.07
Grand total	$2,243,378,453.82	+$36,756,701.91

Investment Assets (Continued)

Book value of terminal and other real estate acquired in anticipation of future use.	
INVESTMENTS IN AFFILIATED COMPANIES	$643,099,346.85
Investments in securities of Transportation System Companies, which are included in the outstanding obligations as shown by the balance sheet, but which are owned within the system;	
Investments in securities of, and advances to, Solely Controlled Affiliated Companies and Jointly Controlled Affiliated Companies collateral to, but not a part of, the Transportation System, representing, principally, investments as follows:	
Electric Railways in California (full ownership), owning 45 electric locomotives, 1 steam locomotive, 4 gas-electric locomotives, 551 motor cars, 19 motor car trailers, 581 freight-train cars, 101 company service cars, and 1 gasoline launch—operated mileage	872.84
(The above railways also own 198 auto buses, 4 auto trucks, 2 auto service cars, and 1 auto business car used in operation of 212 miles of auto bus routes)	
Electric Railways (one-third ownership), owning 4 electric locomotives, 15 motor cars, 2 motor car trailers, 33 freight-train cars, and 2 company service cars—operated mileage	56.20

Investment Assets (Continued)

Steam Railways (full ownership), owning 112 steam locomotives, 131 passenger-train cars, 1,251 freight-train cars, and 412 company service cars—operated mileage	1,535.43
Steam Railways (half ownership), owning 90 steam locomotives, 235 passenger-train cars, 1,631 freight-train cars, 381 company service cars, 8 automobile and passenger ferry boats, and 1 gasoline launch—operated mileage	804.49
(The above jointly owned steam rail-	

[ADVERTISEMENT]

Investment Assets (Continued)

ways include the Northwestern Pacific Railroad, with operated mileage of 477.56, full control of which was acquired in January, 1929, as shown further on under the heading "Acquisition of full control of the Northwestern Pacific Railroad Company.")

Total operated mileage of railways collateral to, but not a part of, the Transportation System 3,268.96

Automotive Transportation Companies (full ownership), owning 151 auto buses, 6 auto business cars, 5 auto service cars, and 8 auto trucks, operating over 4,986 miles of auto bus routes. Although this service is operated independently, it is coordinated with, and constitutes an extension of, the steam train service of your Company's transportation lines;

Land Companies (full ownership), owning 8,789,273 acres of land in various states traversed by the Southern Pacific Lines; and 5,902 town lots. Of these town lots, 2,873 are located in the State of Texas; 644 in the State of Nevada; and 2,385 in the State of California, of which 953 are located in Los Angeles and vicinity;

Oil Companies (full ownership), owning 2,444 acres (including 1,925 acres fully owned and 519 acres jointly owned), and holding under lease 30,066 acres of producing and prospective oil lands in Texas and Louisiana, together with ownership of mineral rights in 84,159 acres of prospective oil lands in Texas. Number of producing wells, 144. Annual production about, 1,800,000 barrels;

Timber Lands (full ownership): 21,567 acres of timber lands and 44,925 acres of other lands, including 2 saw mills;

Coal Lands (full ownership): 22,688 acres of coal lands in Oregon and Colorado, 6,321 acres of prospective coal lands in Texas, and 2,502 acres of lignite, clay, and other lands in Texas and Louisiana;

Terminal Companies (full ownership), owning 25 acres of land in the City of Los Angeles, California, with improvements, including three two-story market buildings, and one seven-story, two six-story, and one four-story warehouse buildings situated on the line of Southern Pacific in the heart of the wholesale district of Los Angeles;

Southern Pacific Building Co. (full ownership), owning a nine-story office building at Houston, Texas;

Associated Pipe Line Co. (one-third ownership), owning 561 miles of oil pipe line serving California oil fields;

Pacific Fruit Express Co. (half ownership), operating 40,513 refrigerator cars serving Southern Pacific, Union Pacific, and Western Pacific lines; and

Stock interest, as indicated, in following companies operating railroad terminal facilities:

El Paso (Texas) Union Passenger Depot Co., 50 per cent;

Ft. Worth (Texas) Union Passenger Station Co., 50 per cent;

Northern Pacific Terminal Co. (Portland, Ore.), 20 per cent;

Ogden (Utah) Union Railway & Depot Co., 50 per cent;

Union Terminal Co. (Dallas, Tex.) 12.50 per cent.

OTHER INVESTMENTS 6,636,981.65

Of this amount, $2,202,383.61 represents cash in hands of Trustee, to be applied in payment for new equipment; and the remainder represents, principally, investments in outside securities.

Total Investments $2,132,397,608.03

Road and Equipment—Southern Pacific Lines

The increase during the year in Investment in Road and Equipment of the Transportation System, as shown in the balance sheet, amounted to $25,446,588.36, as follows:

Expenditures for Road Extensions	$902,987.75	
Expenditures for Rolling Stock	8,065,710.68	
Expenditures for Floating Equipment	270,145.38	
Expenditures for Other Additions and Betterments	22,048,416.41	
Total Expenditures		$31,287,260.22
Add		
Investment in Road and Equipment of the Texas Midland Railroad at April 1, 1928, on which date such company was taken into the Transportation System, as explained further on under the heading "Acquisition of Control of the Texas Midland Railroad"		3,605,449.69
		$34,892,709.91
Deduct		
Improvements to property held under lease, included in above expenditures, transferred to "Improvements on Leased Railway Property"	$53,099.47	
Adjustments in construction accounts, completed lines	95,326.17	
Property retired, equipment vacated, and other adjustments	9,297,695.91	9,446,121.55
Net increase in Investment in Road and Equipment		$25,446,588.36

The following table shows the number of units of each class of rolling stock owned at December 31, 1928, and at December 31, 1927, and the number of units of each class added and retired during year:

Class	Owned Dec. 31, 1928	Owned Dec. 31, 1927	Changes During the Year Added *	Retired
Locomotives	2,427	2,448	42	63
Passenger-train cars	2,805	2,896	69	160
Freight-train cars	82,469	82,213	1,487	1,231
Company service equipment	5,713	5,860	532	679

* Includes 17 locomotives, 16 passenger-train cars, 191 freight-train cars, and 16 units of company service equipment, acquired with Texas Midland Railroad taken into System April 1, 1928.

Balance Sheet and Income Account of Solely Controlled Affiliated Companies

Below will be found a condensed balance sheet as of December 31, 1928, and a condensed income account for the year 1928, of all separately operated Solely Controlled Affiliated Companies, combined:

BALANCE SHEET	Dec. 31, 1928
ASSETS	
1. Property investment	$253,022,652.95
2. Sinking funds	319,460.86
3. Investments in affiliated companies—Stocks	809,090.12
4. Investments in affiliated companies—Bonds	418,950.00
5. Investments in affiliated companies—Advances	38,502,075.07
6. Other investments	17,591,850.62
7. Cash	1,236,552.90
8. Accounts receivable	3,307,709.22
9. Material and supplies	3,819,108.23
10. Merchandise	485,021.73
11. Deferred assets	1,986,023.48
12. Discount on securities	11,196,338.96
13. Other unadjusted debits	19,860,090.33
14. Total assets	$352,554,924.39
LIABILITIES	
15. Capital stock	*$148,471,460.00
16. Premium on capital stock	535,151.75
17. Funded debt:	
(a) Held by the public $30,864,000.00	
(b) Held within the system 29,968,000.00	
(c) Total	60,832,000.00
18. Nonnegotiable debt to affiliated companies	64,501,215.57
19. Current liabilities	3,945,556.47
20. Deferred liabilities	122,586.19
21. Accrued depreciation	14,330,904.60
22. Reserve for amortization of property investment	10,066,052.64
23. Other unadjusted credits	13,896,426.60
24. Total liabilities	$316,701,353.82
25. Additions to property through income and surplus	$1,434,340.97
26. Sinking fund reserves	364,686.52
27. Appropriated surplus not specifically invested	700,000.00
28. Profit and loss—Balance	33,354,543.08
29. Total corporate surplus	$35,853,570.57
30. Grand total	$352,554,924.39

INCOME ACCOUNT	Year Ended Dec. 31, 1928
31. Operating revenues	$34,477,153.69
32. Operating expenses (including depreciation)	27,786,270.62
33. Net revenue from operations	$6,690,883.07
34. Taxes	2,549,612.56
35. Uncollectible railway revenues	204.66
36. Equipment and joint facility rents—Net	401,957.28
37. Net operating income	$3,739,108.57
38. Nonoperating income	1,242,544.80
39. Gross income	$4,981,653.37
40. Interest on funded debt	$2,994,184.77
41. Other deductions from gross income	1,139,444.56
42. Total deductions	$4,133,629.33
43. Net income	$848,024.04
44. Income applied to sinking and other reserve funds	$31,820.00
45. Income balance transferred to credit of profit and loss	$816,204.04

* The amount of outstanding capital stock includes $1,300.00 owned by Directors and $52,910.00 owned by the public; the remaining $148,417,250.00 being owned within the system.

Claim for Closing Colorado River Break

On page 22 of last year's report, mention was made of a suit brought under an Act of Congress, by your Company, in the Court of Claims, Washington, D. C., to enforce its claim against the Government of the United States, for the sum of $1,113,677.42, expenditures incurred over twenty-one years ago, at the instance of President Roosevelt, in closing a break in the Colorado River to protect the Imperial Valley.

On April 12, 1928, United States Court of Claims Commissioner, John M. Lewis, filed his findings, allowing your Company, on account of its claim, the sum of $1,012,700. Government counsel has however, excepted to the findings of the Commissioner. Briefs have been filed by your Company and

[ADVERTISEMENT]

by the Government and the case is now on the calendar of the Court of Claims for oral argument.

After submission to that Court, it may, by its judgment, affirm the findings of the Commissioner, or the Court may make independent findings of its own as to the amount due. The parties have the right to appeal. If no appeal be taken, it will then be in order for Congress, by appropriation, to pay the claim as finally determined.

New Line From Klamath Falls, Oregon, to Alturas, Calif.

On page 24 of last year's annual report, mention was made of the construction by your Company of a line extending from Klamath Falls, Oregon, through Cornell, California, to a connection with the Nevada-California-Oregon Railway near Alturas, California, a distance of about 95 miles.

The construction of this line was resumed during 1928, and at the end of the year grading had been completed, ready for rails and ties, on about 12 miles, and was under way along the remaining 83 miles of the line. It is expected that the line will be placed in operation during the latter part of 1929.

Extension of Oregon, California and Eastern Railway

On pages 22 and 23 of last year's annual report, mention was made of the purchase by your Company of the Oregon, California & Eastern Railway, and the subsequent sale of one-half the capital stock of said Company to the Great Northern Railway Company, under authority of the Interstate Commerce Commission. On May 19, 1928, grading was started on an extension of the line eastward from its terminus at Sprague River to Bly, a distance of 26.42 miles, and on November 23, 1928, laying of rail into Bly was completed. Severe weather conditions in December caused cessation of the work before the ballasting and the fencing of the line were completed. Work will be resumed early in the Spring of 1929, and, it is expected, will be completed within a few weeks from the date of commencement. This extension will tap a heavily timbered territory which has not been developed heretofore because of lack of transportation facilities. The opening up of this territory will result immediately in a considerable increase in the log traffic moving over the Oregon, California & Eastern Railway, a large part of which will be moved subsequently as lumber over the lines of your Company.

Automatic Block Signals

The mileage of your Company's Pacific Lines equipped with automatic block signals has been gradually increased from time to time, so that nearly all of its main lines are so protected. A program was adopted in the latter part of 1928 involving an expenditure of $2,315,000, which will result in the complete equipment of all of such main lines some time in 1930.

Southern Pacific Motor Transport Company

On page 24 of last year's report, mention was made of the incorporation in April, 1927, of the Southern Pacific Motor Transport Company, all of whose capital stock is owned by your Company. During the year 1928 the operations of the Southern Pacific Motor Transport Company have been actively extended, with the view of providing a more economical method of transportation by the substitution of motor coaches for steam and electric trains, and of providing supplementary feeder service for your Company's lines, where profitable. The substitution of motor coach service for steam train operation is being established where it is found more economical, upon securing the approval of the necessary regulatory commissions. Such substitutions have been made upon several branch lines in California; and motor bus operations in Oregon have enabled your Company to discontinue to a great extent both electric and steam train operations on branch lines which were no longer profitable. Interstate operations have been established between Los Angeles, California, and El Paso, Texas; between San Francisco, California, and Portland, Oregon; between Grants Pass, Oregon, and Eureka, California; between Truckee, California, and Reno, Nevada; and between Phoenix, Arizona, and Lordsburg, New Mexico over the "Apache Trail."

To provide a more flexible service and to secure greater economy in operation, the Southern Pacific Motor Transport Company, during 1928, acquired control by stock ownership, of the Oregon Stages, Inc., and the Coast Auto Lines, Inc., and similarly in January, 1929, acquired control of the Pacific Stages, Inc. These three companies operate a total of 75 motor coaches in intrastate service in Oregon, and these operations, together with the operations of the Southern Pacific Motor Transport Company, will provide an adequate and coordinated service with your Company's rail lines serving Western Oregon resulting in improved service and reduced expenses. With the acquisition of these three companies, the Southern Pacific Motor Transport Company now has a total of 222 motor coaches, trucks, and service cars operating in the States of Oregon, California, Nevada, Arizona, New Mexico, and Texas.

Motor Coach Activities of Pacific Electric Railway Company

The Pacific Electric Railway Company, a wholly owned subsidiary of the Southern Pacific Company, operating 686.56 miles of electric lines in Southern California, is located in one of the most rapidly growing territories of the United States, and while the increase in population in that part of California has been marked, the passenger business of the Pacific Electric Railway Company has not grown in proportion, both the interurban lines and the local street car lines of that Company having been seriously affected by the increasing motor coach and automobile competition. To meet this condition the Pacific Electric Railway Company established a motor coach service, and is now operating forty-two motor coaches over ten interurban routes aggregating 143 miles, and seventy-two motor coaches over sixteen routes, giving city service, aggregating 81 miles, or a total of one hundred and fourteen motor coaches operating over twenty-six routes having an aggregate length of 224 miles.

The Western section of Los Angeles is served locally by the Pacific Electric Railway Company and by the Los Angeles Railway, and in order to meet parallel motor coach competition which was threatened, a joint agency, known as the Los Angeles Motor Coach Company, was formed by the Pacific Electric Railway and the Los Angeles Railway. This joint agency, with 132 motor coaches, is now operating, for the equal joint account of the parent companies, four routes giving cross town service between the territory served by the Pacific Electric and that served by the Los Angeles Railway, and two routes from the center of the City through territory served by both lines.

In Southern California, motor truck operation has diverted from the railroads a large amount of the local less-than-carload business, and to meet this competition, there was incorporated on October 13, 1928, the Pacific Electric Motor Transport Company, all of whose capital stock is owned by the Pacific Electric Railway Company. This Company will begin operations in the Spring of 1929 with an experimental service from store door to store door, the pick-up and delivery service being rendered, as far as possible, by local motor truck companies, under contract and lease arrangements, the railway being used for the line haul service.

Suisun Bay Bridge

To replace the train-ferry between Port Costa and Benicia, a distance of about one mile, which constitutes a gap in the heavy traffic, double track, main line between Oakland and Sacramento, and in the main line between Oakland and Portland, authority has been obtained from the War Department and from the Interstate Commerce Commission, to construct a double track railroad bridge across Suisun Bay, about three miles east of the present ferry.

This bridge, which will extend from Suisun Point in the City of Martinez, to Army Point, east of Benicia, will be 5,600 feet long, the main spans will be 531 feet long, and there will be a lift span 327 feet long which will provide 300 feet of horizontal clearance and 135 feet of under-clearance. However, as the minimum clearance under bottom of the steel will be 70 feet at mean high water, which will permit nearly all the water-borne traffic at the bridge to pass under it, it is estimated that it will be necessary to open the lift span, on an average, only about five times during each twenty-four hours, so that the effect of the opening of the lift span upon train operations will be negligible. The estimated cost of the bridge, including the cost of building a second track on the line from Port Costa to Suisun Point in the City of Martinez, is $12,000.000.

It is estimated that the saving which will result from the discontinuance of this ferry service will exceed the cost of operating the bridge by an amount that will be more than sufficient to pay the carrying charges on the cost of the bridge, including depreciation.

Acquisition of Full Control of the Northwestern Pacific Railroad Company

Pursuant to authority granted by the Interstate Commerce Commission in its order, dated December 14, 1928, in Finance Docket No. 7102, the Southern Pacific Company, on January 17, 1929, acquired full control of the Northwestern Pacific Railroad Company, by the purchase from the Atchison, Topeka & Santa Fe Railway Company of its one-half of the outstand-

[Advertisement]

ing capital stock of the said Company, the total amount of such outstanding stock, since the incorporation of the Northwestern Pacific, in January, 1907, having been owned, one-half each, by your Company and the Atchison, Topeka & Santa Fe Railway Company.

The Northwestern Pacific Railroad Company owns a line of road extending from Sausalito and Tiburon, California, in a general northerly direction, to Trinidad, California, which, with several branch lines, makes an aggregate of 514.68 miles of road owned, of which 477.56 miles are operated directly by the Northwestern Pacific, and 37.12 miles of branch lines are leased to lumber companies. This line of railroad is an important direct connection of your Company's Pacific Lines which receive a substantial haul on a large part of the freight traffic originating on and destined to such line. With complete ownership of the line it is expected that substantial economies in operation will be effected by reduction of expenses not possible under dual control.

San Jose Line Change

Because of the expiration of the franchise by virtue of which your Company has operated along 4th Street, in the heart of the City of San Jose, California, it becomes necessary to establish a new route through that City.

This will involve a line change extending from College Park to Lick station, a distance of 5.64 miles, and will result in a route one-quarter of a mile shorter than the present operated line. It will be so located that there will be a minimum of interference to train movements by vehicular traffic at cross streets, the plan contemplating eight grade separations, permitting greater speed of trains with consequent saving in running time.

The estimated cost of the project is $3,236,848, and it is proposed to undertake the work at once, with the expectation of completing it within two years.

A new passenger station will be built on the line change at a suitable location.

Southern Pacific Railroad Company of Mexico

The operations of the line were interrupted at various times during the year, by the firing of bridges and trestles and by tunnel fires set by bandits and Yaqui Indians, eight trestles having an aggregate length of 1,545 feet, and 1,723 feet of timber lining in two tunnels, having been destroyed during the year by such fires. Operations were also interfered with by damages caused by floods in the Presidio, Rosario, and Sonora Rivers. Charges to operating expenses on account of these extraordinary causes, including the charges in connection with replacing the bridge over the Fuerte River (washed out in 1927) with a 700 foot steel bridge and 540 feet of trestle, increased operating expenses by about $584,000.

The unsettled conditions which existed in 1927, however, were greatly improved during 1928, with resulting benefits to agriculture and industry, which in turn resulted in an increase in the volume of railroad traffic. Operating results for the year 1928, therefore, show a substantial improvement over those of the previous year. Expressed in United States Currency, operating revenues for the year amounted to $6,474,207, an increase of $672,638, or 11.59 per cent. Operating expenses amounted to $5,278,023, a decrease of $812,093, or 13.33 per cent. After deductions for Taxes, Joint Facility Rents, and Uncollectible Railway Revenues, there was a net operating income of $831,386 compared with an operating loss last year of $708,324.

At the time of going to press, affairs in Mexico are in a very unsettled condition which, probably, will have a serious affect upon the operations of this line during 1929.

Southern Pacific Golden Gate Ferries, Ltd.

On account of the wide distribution and increased use of automobiles, the transportation of automobiles by ferry across San Francisco Bay between San Francisco and other Bay points, has grown rapidly during the past few years. To provide for this traffic, automobile ferries have been operated by your Company, by the Northwestern Pacific Railroad Company, and by the Golden Gate Ferries, Inc., between San Francisco on the one hand, and Oakland, Alameda, Richmond, Berkeley, Sausalito, and Vallejo, California, on the other. The result has been a wasteful duplication of service without compensating public benefit or adequate return upon the investments of the companies mentioned. To improve the situation and to avoid such costly and unprofitable operations, an agreement has been reached between the Southern Pacific Company, the Northwestern Pacific Railroad Company, and the Golden Gate Ferries, Inc., under the terms of which the three companies will transfer to a new company, to be known as the SOUTHERN PACIFIC GOLDEN GATE FERRIES, LTD., the automobile ferry equipment and facilities heretofore operated by the respective companies. Appraisal will be made of the value of the properties, now estimated at $15,500,000, and securities of the new company will be issued to pay for such properties. Southern Pacific interests will direct operations of the new company through having, with a majority of the stock, five of its nine directors.

It is expected that substantial savings will be made through the elimination of wasteful service, the better employment of the operating equipment, and the operating economies which will be effected as a result of this consolidation.

The plan is subject to the approval of the California Railroad Commission, and it is hoped it will be made operative some time during the year 1929.

Acquisition of Control of the Texas Midland Railroad

Pursuant to authority granted by the Interstate Commerce Commission in its order, dated February 11, 1928, in Finance Docket No. 6650, the Southern Pacific Company and the Texas and New Orleans Railroad Company (a solely controlled subsidiary of the Southern Pacific Company) acquired control on April 1, 1928, (the former by stock ownership and the latter by lease) of the Texas Midland Railroad, extending from Ennis, Texas, a divisional terminal point on the Dallas Division of your Texas Lines, to Paris, Texas, a distance of 125 miles. This line, which thus becomes a part of the Southern Pacific Lines in Texas and Louisiana, serves an agricultural district which it is expected will give your lines a considerable tonnage of cotton and other valuable traffic.

Federal Valuation of Railroads

The joint conferences referred to on page 27 of last year's report, between representatives of your Company and of the Interstate Commerce Commission's Bureau of Valuation, were continued in 1928, and resulted in reducing the number of protested items to be disposed of at formal hearings, so that the formal hearings in respect of the tentative valuations of the lines in Texas and Louisiana were completed on July 2, 1928, and of the Pacific Lines on October 26, 1928. The joint conferences resulted in substantial increases in the estimates of reproduction cost which the Bureau of Valuation recommended to the Commission. At the formal hearings many claims involving principles upon which the Commission had formerly decided adversely to your Company's contentions, were disposed of by making general and specific reservations under which the right was reserved to support such claims by the introduction of evidence, and by argument, whenever the Commission makes any change in its decisions relating to these or similar claims; or makes any order changing or modifying its policy or practice in any way relating to such claims; or whenever any decision or order entered in the primary valuation proceedings becomes related to, or is used in any manner in, any other proceedings; or whenever the valuation of the properties of your Companies may be determined as of some subsequent date or dates.

Briefs have been filed by your Companies in respect of the items not disposed of at the joint conferences and formal hearings, and after the Bureau of Valuation has filed its brief, and your Companies have filed their reply briefs, the matter will then be submitted to the Commission for its final decision.

In connection with the matter of bringing to a common date, the value of the properties of all common carriers subject to the provisions of Section 19a of the Interstate Commerce Act, the Commission issued an order, effective July 1, 1928, requiring each carrier to file with the Commission, returns showing all additions and retirements, and the cost thereof, from the several valuation dates down to and including December 31, 1927.

The method which the commission will use in bringing the valuations of all properties down to a common date has not been disclosed, and it cannot now be determined how long it will take to accomplish this task.

Change in Organization

On December 13, 1928, the Board announced the following changes in the organization and management of the Company's affairs, effective January 1, 1929:

Mr. Henry W. de Forest, Chairman of the Executive Committee since June 1, 1925, was elected Chairman of the Board, a new position. Mr. de Forest will have the management of the Company's general financial affairs and consolidation matters.

Mr. Hale Holden, for many years President and Chairman

[ADVERTISEMENT]

of the Executive Committee of the Chicago, Burlington & Quincy Railroad Company, was elected Chairman of the Executive Committee. Mr. Holden will have general control of the Company's business, except the management of its general financial affairs and consolidation matters.

Mr. Wm. Sproule, President since September 25, 1911 (except during the period from July 12, 1918, to December 31, 1919, both inclusive, when he was District Director of the United States Railroad Administration), after more than 41 years of service with the Southern Pacific Lines, retired from active service December 31, 1928, under the pension rules of the Company and in accordance with his expressed wish.

Mr. A. D. McDonald, Vice Chairman of the Executive Committee of this Company, will, in addition to the other duties of that position, have general control of the management of the Southern Pacific Steamship Lines. He will also continue in the office of President of the Texas and New Orleans Railroad Company (the Southern Pacific Lines in Texas and Louisiana). In these dual capacities, he will have immediate charge, under the direction of the Chairman of the Executive Committee, of the management, operation and traffic of the Southern Pacific Steamship Lines, and of the railroads and other properties of all Southern Pacific Lines East of El Paso, Texas.

Mr. Paul Shoup, Executive Vice President since June 1, 1925, was elected President to succeed Mr. Sproule. Mr. Shoup will have immediate charge, under the direction of the Chairman of the Executive Committee, of the management, operation, and traffic of the railroads and other properties of the Company, West of El Paso, Texas, and Ogden, Utah. The office of Executive Vice President was discontinued.

Mr. Lewis J. Spence, Executive Officer since June 1, 1925, after more than 43 years of continuous service with the Southern Pacific Lines, at his own request, retired from active service on December 31, 1928. The office of Executive Officer was discontinued.

Mr. J. H. Dyer, General Manager of the Pacific Lines, was appointed Vice President in charge of Operations. Mr. Dyer will have immediate charge, under the direction of the President, of the maintenance and operation of the railroads of the Company West of El Paso, Texas, and Ogden, Utah.

Mr. F. L. Burckhalter, First Assistant General Manager of the Pacific Lines, was appointed General Manager to succeed Mr. Dyer, promoted. The position of First Assistant General Manager was discontinued.

The headquarters of Mr. T. O. Edwards, General Auditor in charge of operating accounts, was transferred from San Francisco, California, to New York City.

The title of Mr. C. M. Scott, Assistant Treasurer, with headquarters in San Francisco, California, was changed to Local Treasurer.

General

The dividends for the year, on the capital stocks of the Southern Pacific Company and its Transportation System Companies held by the public, amounted to $22,342,884.00, as follows:

Dividends on capital stock of the Southern Pacific Company:	
1½ per cent. paid April 2, 1928	$5,585,713.50
1½ per cent. paid July 2, 1928	5,585,713.50
1½ per cent. paid October 1, 1928	5,585,713.50
1½ per cent. payable January 2, 1929	5,585,713.50
Total Southern Pacific Company	$22,342,854.00
Dividends on stocks of Transportation System Companies held by the public	30.00
Total dividend payments for the year	$22,342,884.00
The total taxes for the year, of the Transportation System and of all separately operated Solely Controlled Affiliated Companies, amounted to	$24,075,037.99

Under the pension system put into effect January 1, 1903, there were carried on the pension rolls at the end of the year, 1,982 employes. The payment to pensioners for the year amounted to $1,189,012.27, equivalent to six per cent. per annum on an investment of $19,816,871.17.

The Board announces with sorrow the death, on January 4, 1929, of Mr. J. Horace Harding, who served your Company as a Director from January 13, 1913, to the time of his death, and also served as a Member of the Executive Committee from and after April 4, 1918; the death on January 29, 1929, of Mr. Ogden Mills, who served your Company as a Director from April 4, 1906, to the time of his death, and also served as a Member of the Executive Committee from and after June 20, 1907; and the death, on March 24, 1929, of Mr. Samuel Rea, who served your Company as a Director from April 9, 1919 to the time of his death.

The Board gratefully acknowledges its appreciation of the loyal and efficient services rendered by officers and employes during the year.

By order of the Board of Directors,

HENRY W. DE FOREST,
Chairman of the Board.

Central of Georgia Railway Company

Report of the Board of Directors

To the Stockholders of Central of Georgia Railway Company:

The Board of Directors submits the following report of the operations and affairs of Central of Georgia Railway Company for the year ended December 31, 1928:

Income

A summary of the income for the year ended December 31, 1928, as compared with the previous year is shown in Table 2.

Railway Operating Revenues

"Railway Operating Revenues" amounted to $25,132,966.38 this year as compared with $27,641,309.93 last year, a decrease of $2,508,343.55, or 9.07 per cent. For details of "Railway Operating Revenues' see Table 2.

"Freight Revenue" decreased $1,738,090.83, or 8.37 per cent. Tons of revenue freight carried one mile were 1,554,074,471, a decrease of 193,380,947, or 11.07 per cent, compared with last year. The average rate per ton mile was 1.22 cents, an increase of 0.03 cents, or 2.52 per cent, compared with the previous year.

"Passenger Revenue" decreased $693,827.35, or 15.69 per cent. The number of passengers carried one mile was 121,757,905, a decrease of 21,335,485, or 14.91 per cent, compared with last year. The average revenue per passenger per mile decreased 0.03 cents, or .97 per cent. The decrease in passenger revenue was due mainly to increased motor competition.

"Mail Revenue" increased $10,452.42, or 1.97 per cent, due to increase in rates granted under order of Interstate Commerce Commission, effective August 1, 1928.

"Express Revenue" decreased $13,501.05, or 1.53 per cent, due to a decrease in the volume of express transported.

There was a decrease of $41,159.45, or 41.19 per cent in other passenger train revenue, consisting of "Excess Baggage," "Milk" and "Other Passenger Train Revenue."

"Switching" and "Special Service Train Revenue" decreased $11,267.31, or 3.11 per cent.

"Incidental" and "Joint Facility Revenues" decreased $20,949.98, or 3.56 per cent.

Railway Operating Expenses

"Railway Operating Expenses" amounted to $19,208,786.48 this year, as compared with $20,945,626.48 last year, a decrease of $1,736,840.00, or 8.29 per cent. For details of "Railway Operating Expenses" see Table 9.

The decrease of $425,845.83, or 11.87 per cent, in "Maintenance of Way and Structures Expenses" was due mainly to a decrease in amount of new rail and ties used.

The decrease of $484,947.56, or 9.83 per cent, in "Maintenance of Equipment Expenses" was due mainly to decreased use of equipment and to increased efficiency of shop forces. Charges to "Maintenance of Equipment" for depreciation were $900,785.12, an increase of $9,570.53, or 1.07 per cent. The average miles per serviceable locomotive were 31,283, a decrease of 345 miles, or 1.09 per cent. The average age of locomotives was 19.6 years, as compared with 19.4 for previous year.

"Traffic Expenses" decreased $39,346.06, or 4.37 per cent.

The decrease of $697,964.03, or 6.83 per cent in "Transportation Expenses" was due mainly to decrease in the volume of business handled and to increased operating efficiency.

"Miscellaneous Operations" decreased $27,889.40, or 15.66 per cent, due mainly to decrease in dining car service in through trains.

"General Expenses" decreased $92,525.07, or 7.77 per cent.

The increase in expenses by reason of the decrease of $31,677.95, or 47.41 per cent, in "Transportation for Investment—Credit" was due to the decrease in transportation performed in connection with construction work carried on during the year.

Railway Tax Accruals

"Railway Tax Accruals" amounted to $1,512,756.54 this year,

[ADVERTISEMENT]

as compared with $1,555,181.83 last year, a decrease of $42,425.29, or 2.73 per cent. There was a decrease of 109,668.54 in Federal income tax as a result of the decline in taxable income. This decrease was partly offset by an increase of $55,750.25 in State, County and Municipal taxes due to increase in assessed values and rates and by an increase of $11,493.00 in Federal capital stock tax due to additional assessments for years 1925 and 1926. The taxes for the year were equal to 25.54 per cent of the "Net Revenue from Railway Operations" and exceeded the total dividends paid to stockholders by $112,756.54.

Equipment Rents—Net Credit

"Equipment Rents—Net Credit" amounted to $164,427.16 this year, as compared with $12,424.46 last year, a saving in net rental paid for the use of equipment of $152,002.70, due mainly to decreased use of foreign and privately owned freight cars because of the decreased volume of business handled and increased rental from our cars on other railroads.

Joint Facility Rent—Net Debit

"Joint Facility Rent—Net Debit" was $120,123.24 this year, as compared with $89,763.87 last year, an increase of $30,359.37, due mainly to increased rentals at Montgomery, Ala.

Non-Operating Income

"Non-Operating Income" amounted to $926,476.17 this year, as compared with $861,217.70 last year, an increase of $65,258.47. There was an increase of $38,643.71 in "Miscellaneous Non-Operating Physical Property" due mainly to the decrease in charges thereto in the previous year for adjustment in value of leased material when returned by lessees. "Dividend Income" increased $37,590.50, being the amount of dividends on stock of Fruit Growers Express Company and Wrightsville and Tennille Railroad Company in excess of amount paid during the previous year. "Miscellaneous Rent Income" increased $12,500.65, because of increased rents for use of property adjacent to the Company's lines. "Income from Sinking and Other Reserve Funds" increased $10,860.90, due to the inclusion of interest for the entire year on advances to Hospital Department. These increases were partly offset by a decrease in "Income from Funded Securities" of $16,217.47, due to decrease in interest on advances to affilyiated companies and a decrease in "Income from Unfunded Securities and Accounts" of $18,940.93, due to a decrease in interest during construction on capital outlays during the year.

Deductions from Gross Income

"Deductions from Gross Income" amounted to $3,664,107.95 this year, as compared with $3,696,131.61 last year, a decrease of $32,023.66. There was a decrease of $11,907.53 in "Rent for Leased Roads," due to reduction in rent for properties of The Chattahaachee & Gulf Railroad Company. There was a decrease of $36,831.48 in "Interest on Funded Debt," due to equipment trusts retired. Other items of decrease were "Amortization of Discount on Funded Debt," $7,958.52; "Miscellaneous Income Charges," $576.26; "Interest on Unfunded Debt, $745.02. These decreases were partly offset by an increase in "Interest on Non-Negotiable Debt to Affiliated Companies" of $22,890.60, and an increase in "Miscellaneous Tax Accruals" of $3,181.75, representing taxes on warehouses at Macon, Ga., previously charged "Railway Tax Accruals."

Indebtedness

There were retired and cancelled under the terms of the respective trust agreements, Central of Georgia Equipment Trust, Series "M," $59,000.00; Series "N," $66,000.00; Series "O," $194,000.00; Series "P," $94,000.00; Series "Q," $256,000.00; Series "1," $63,663.30; a total of $732,663.30. In addition, $800.00 of "Third Preference Income" scrip was purchased and cancelled.

"Non-Negotiable Debt to Affiliated Companies" increased $1,799,895.00 during the year, being the amount of temporary advances by Ocean Steamship Company of Savannah and Illinois Central Railroad Company.

Additions and Betterments

There were expended during the year for "Additions and Betterments" (including improvements on lessor properties) $1,397,143.61. The following is a classified statement of these expenditures:

Road:		
Engineering		$ 12,346.26
Land for transportation purposes		8,985.40
Grading		64,803.08
Bridges, trestles and culverts		77,216.69
Ties		53,234.61
Rail		53,991.67
Other track material		156,386.10
Ballast		7,253.63
Track laying and surfacing		45,952.17
Right-of-way fences		1,798.71
Crossings and signs		61,618.70
Station and office buildings		92,216.97
Roadway buildings		6,617.89
Water stations	Cr.	*185.41*
Fuel stations	Cr.	*4,024.00*
Shops and enginehouses		14,747.53
Storage warehouses		35.87
Telegraph and telephone lines	Cr.	*12,261.36*
Signals and interlockers	Cr.	*3,910.67*
Power distribution systems		2,550.81
Power line poles and fixtures		361.93
Miscellaneous structures	Cr.	*1,440.17*
Paving		2,053.93
Roadway machines		2,702.52
Assessments for public improvements		8,301.27
Shop machinery		12,971.02
Power plant machinery	Cr.	*128.51*
Power substation apparatus		68.29
Total		$ 664,264.93
Equipment:		
Steam locomotives		$ 16,983.26
Freight train cars		1,000,534.16
Passenger train cars		28,661.81
Work equipment		5,528.30
Total		$ 1,051,707.53
Less equipment retired	Cr.	*318,828.85*
Net		$ 732,878.68
Grand Total		$ 1,397,143.61

General Remarks

The Board of Directors takes pleasure in expressing its appreciation to officers and employees for their loyal and efficient service.

By order of the Board of Directors.

CHARLES H. MARKHAM,
Chairman of the Board.

Table 2—Income statement for the years Ended December 31, 1928 and 1927

	1928	Per Cent. of Total Operating Revenues	1927	Per Cent. of Total Operating Revenues	+Increase —Decrease
Average miles operated	1,917.28		1,911.78	+	5.50
Railway Operating Revenues:					
Rail-Line Transportation:					
Freight	$19,020,056.55	75.68	$20,758,147.38	75.10 —	$1,738,090.83
Passenger	3,729,076.58	14.84	4,422,903.93	16.00 —	693,827.35
Excess baggage	24,895.59	.09	28,868.35	.10 —	3,972.76
Mail	540,471.01	2.15	530,018.59	1.92 +	10,452.42
Express	867,120.06	3.45	880,621.11	3.19 —	13,501.05
Milk	7,740.66	.03	11,929.60	.04 —	4,188.94
Other passenger-train	26,124.52	.10	59,122.27	.21 —	32,997.75
Switching	336,242.58	1.34	342,553.89	1.24 —	6,311.31
Special service train	14,220.00	.06	19,176.00	.07 —	4,956.00
Total rail-line transportation revenue	$24,565,947.55	97.74	$27,053,341.12	97.87 —	$2,487,393.57
Incidental Operating Revenue:					
Dining and buffet	$ 114,499.10	.46	$ 143,127.72	.52 —	$ 28,628.62
Hotel and restaurant	4,014,01	.02	4,283.37	.01 —	269.36
Station, train and boat privileges	13,718.58	.05	14,376.35	.05 —	657.77
Parcel room	74.00	..	97.20	.. —	23.20
Storage—freight	77,991.82	.31	79,068.78	.29 —	1,076.96
Storage — baggage	663.88	..	884.72	.. —	220.84
Demurrage	56,763.32	.23	57,958.89	.21 —	1,195.57
Power	5,870.84	.02	5,198.96	.02 +	671.88
Rents of buildings and other property	4,810.42	.02	5,457.47	.02 —	647.05
Miscellaneous	239,181.10	.95	225,450.27	.82 +	13,730.83
Total incidental operating revenue	$ 517,587.07	2.06	$ 535,903.73	1.94 —	$ 18,316.66
Joint Facility Operating Revenue:					
Joint facility—Cr.	$ 51,168.79	.20	$ 53,397.63	.19 —	2,228.84
Joint facility—Dr.	*1,737.03*	..	*1,332.55*	.. +	404.48
Total joint facility operating revenue	$ 49,431.76	.20	$ 52,065.08	.19 —	$ 2,633.32
Total railway operating revenue	$25,132,966.38	100.00	$27,641,309.93	100.00 —	$2,508,343.55
Railway Operating Expenses:					
Maintenance of way and structures	$ 3,161,075.57	12.58	$ 3,586,921.40	12.98 —	$ 425,845.83

[Advertisement]

	1928	Per Cent. of Total Operating Revenues	1927	Per Cent. of Total Operating Revenues	+Increase —Decrease
Railway Operating Revenues (continued):					
Maintenance of equipment	4,449,344.70	17.70	4,934,292.26	17.85	— 484,947.56
Traffic	860,459.97	3.42	899,806.03	3.26	— 39,346.06
Transportation —rail line	9,524,259.47	37.90	10,222,223.50	36.98	— 697,964.03
Miscellaneous operations	150,238.82	.60	178,128.22	.64	— 27,889.40
General	1,098,544.31	4.37	1,191,069.38	4.31	— 92,525.07
Transportation for investment —Cr.	*35,136.36*	*.14*	*66,814.31*	*.24*	— 31,677.95
Total railway operating expenses	$19,208,786.48	76.43	$20,945,626.48	75.78	—$1,736,840.00
Net revenue from railway operations	$ 5,924,179.90	23.57	$ 6,695,683.45	24.22	—$ 771,503.55
Railway tax accruals	$ 1,512,756.54	6.02	$ 1,555,181.33	5.63	—$ 42,425.29
Uncollectible railway revenues	5,903.76	.02	12,088.85	.04	— 6,185.09
Railway operating income	$ 4,405,519.60	17.53	$ 5,128,412.77	18.55	—$ 722,893.17
Additions to Railway Operating Income:					
Hire of freight cars — credit balance	$ 161,260.21		$ 18,945.85		+$ 142,314.36
Rent from locomotives	23,733.09		17,724.74		+ 6,008.35
Rent from passenger - train cars	160,757.87		167,277.73		— 6,519.86
Rent from work equipment	10,738.60		13,108.15		— 2,369.55
Joint facility rent income	222,050.57		111,093.16		+ 110,957.41
Total additions to railway operating income	$ 578,540.34		$ 328,149.63		+$ 250,390.71
Deductions from Railway Operating Income:					
Rent for locomotives	$ 8,131.30		$ 7,644.48		+$ 486.82
Rent for passenger - train cars	181,656.42		192,446.38		— 10,789.96
Rent for work equipment	2,274.89		4,541.15		— 2,266.26
Joint facility rent — Deductions	342,173.81		200,857.03		+ 141,316.78
Total deductions from railway operating income	$ 534,236.42		$ 405,489.04		+$ 128,747.38
Net railway operating income	$ 4,449,823.52		$ 5,051,073.36		—$ 601,249.84

	1928	1927	+Increase —Decrease
Non-Operating Income:			
Income balance transferred to Income from lease of road	$ 46,183.75	$ 45,359.64	+$ 824.11
Miscellaneous rent income	124,771.09	112,270.44	+ 12,500.65
Miscellaneous non-operating physical property	41,878.95	3,235.24	+ 38,643.71
Dividend income (Table 5)	529,023.75	491,433.25	+ 37,590.50
Income from funded securities (Table 5)	140,416.35	156,633.82	— 16,217.47
Income from unfunded securities and accounts	23,274.10	42,215.03	— 18,940.93
Income from sinking and other reserve funds	20,928.18	10,067.28	+ 10,860.90
Miscellaneous income	.....	3.00	— 3.00
Total non-operating income	$ 926,476.17	$ 861,217.70	+$ 65,258.47
Gross income	$5,376,299.69	$5,912,291.06	—$535,991.37
Deductions from Gross Income:			
Rent for leased roads (Table 7)	$ 343,719.48	$ 355,627.01	—$ 11,907.53
Miscellaneous rent—Deductions	139,416.21	139,493.41	— 77.20
Miscellaneous tax accruals	3,181.75	.....	+ 3,181.75
Interest on funded debt (Table 6)	3,022,832.18	3,059,663.66	— 36,831.48
Interest on nonnegotiable debt to affiliated companies	48,881.07	25,990.47	+ 22,890.60
Interest on unfunded debt	9,070.70	9,815.72	— 745.02
Amortization of discount on funded debt	79,203.82	87,162.34	— 7,958.52
Miscellaneous income charges	17,802.74	18,379.00	— 576.26
Total deductions from gross income	$3,664,107.95	$3,696,131.61	—$ 32,023.66
Income balance transferred to credit of Profit and Loss	$1,712,191.74	$2,216,159.45	—$503,967.71

The Chesapeake and Ohio Railway Company—Fifty-First Annual Report

RICHMOND, VA., March 31, 1929.

TO THE STOCKHOLDERS:

The Fifty-first Annual Report of the Board of Directors, for the fiscal year ended December 31, 1928, is herewith submitted.

The average mileage operated during the year was 2,723.53 miles, an increase over the previous year of 45.82 miles. The mileage at the end of the year was 2,730.29 miles, an increase of 24.67 miles over mileage on December 31, 1927.

Results for the Year

Operating Revenues		$124,825,172.02
(Decrease $8,217,002.26, or 6.18%)		
Operating Expenses		82,543,248.71
(Decrease $7,189,787.95, or 8.01%)		
Net Operating Revenue		$ 42,281,923.31
(Decrease $1,027,214.31, or 2.37%)		
Taxes and Uncollectible Railway Revenues		8,507,494.05
(Decrease $266,147.68, or 3.03%)		
Railway Operating Income		$ 33,774,429.26
(Decrease $761,066.63, or 2.20%)		
Net Equipment and Joint Facility Rents		2,549,164.69
(Increase $763,830.30, or 42.78%)		
Net Railway Operating Income		$ 36,323,593.95
(Increase $2,763.67, or .007%)		
Miscellaneous Income		$ 2,633,212.21
(Increase $540,887.98, or 25.85%)		
Total Gross Income		$ 38,956,806.16
(Increase $543,651.65, or 1.41%)		
Rental and Other Payments		1,057,927.33
(Increase $423,256.66, or 66.69%)		
Income for year available for interest		$ 37,898,878.83
(Increase $120,394.99, or .32%)		
Interest (24.01% of amount available) amounted to		9,100,776.18
(Decrease $198,465.75, or 2.13%)		
Net Income for the year applicable to dividends		$ 28,798,102.65
(Increase $318,860.74, or 1.12%)		
Dividend of 6½% on Cumulative Convertible Preferred Stock, Series A	$ 67,290.43	
Less—Adjustment account Preferred Stock converted into Common Stock during December, 1928, after December 8, 1928, the date as of which stockholders of record were entitled to dividends	9.04	67,281.39
Net Income equivalent to 24.33% of $118,094,000.00 Common Stock outstanding December 31, 1928		$ 28,730,821.26
Common Stock Dividend—		
2½% on amount of stock held by stockholders of record March 8, 1928	$ 2,946,425.00	
2½% on amount of stock held by stockholders of record June 8, 1928	2,949,252.50	
2½% on amount of stock held by stockholders of record September 8, 1928	2,950,510.00	
2½% on amount of stock held by stockholders of record December 8, 1928	2,952,195.00	
	$11,798,382.50	
Less—Adjustment account of conversion of 6½% Series "A" Preferred Stock into Common Stock during year	2,512.23	11,795,870.27
Remainder available for payments of principal amounts of Equipment Trusts and improvements of physical and other assets		$ 16,934,950.99

Financial

During the year $284,700 of your Company's 6½ percent Cumulative Convertible Preferred Stock, Series "A," which is convertible into Common Capital Stock on the basis of share for share, was converted into a like amount of Common Capital Stock. As of December 31, 1928, the amount of 6½ percent Cumulative Convertible Preferred Stock Series "A" outstanding was $899,800. An increase in the amount of Common Capital Stock and Scrip issued and outstanding as of December 31, 1928, of $284,700 was caused by this conversion.

Reference was made in the annual report for the year ended December 31, 1927, on page 5, to the application of your Company to the Interstate Commerce Commission for authority to acquire all the share of the capital stock of Erie Railroad

[ADVERTISEMENT]

Company and Pere Marquette Railway Company on which this Company held options, and also additional shares thereof sufficient to constitute, together with shares owned by the Virginia Transportation Corporation of which your Company holds the entire issue of capital stock, all or at least a numerical majority of the entire capital stocks of said companies; this matter had not been decided at the time of the issue of said report. On May 8, 1928, the Interstate Commerce Commission issued its report and order upon said application denying to the Railway Company authority to acquire the desired control of the Erie Railroad Company but authorizing acquisition of control of Pere Marquette Railway Company by the purchase of capital stock of that Company, including stock of said Company held by the Nickel Plate (The New York, Chicago and St. Louis Railroad Company), which had been optioned to this Company at a price of $110 plus carrying charges; the Commission also authorized this Company to issue $20,000,000 par value of capital stock to be used in connection with the acquisition of control of the Pere Marquette Railway Company or for other purposes, said stock to be offered to holders of common stock pro rata at $150 per share. The option to purchase the Nickel Plate holdings of Pere Marquette stock at $110 per share, however, had, prior to the decision of the Interstate Commerce Commission, expired and the Directors of the Nickel Plate declined to renew or reinstate said option at such price and further negotiations were entered into for the purchase of said stock. On July 27, 1928, your Company petitioned the Interstate Commerce Commission to issue a supplemental order modifying its original order of May 8, 1928, so as to approve and authorize the acquisition by your Company of 174,900 shares of common capital stock of the Per Marquette Railway Company owned or controlled by the Nickel Plate at a price of $133.33 per share on the terms and conditions of the offer of said Company, set forth in letter from Mr. W. L. Ross, its President, to Mr. W. J. Harahan, President of your Company, and also your Company petitioned the Commission to reconsider and modify its order of May 8, 1928, so as to permit your Company to offer its common stock to its shareholders in the amount of $30,000,000 of par at $100 per share instead of $20,000,000 of par at $150 per share. Hearings before the Interstate Commerce Commission with respect to said petitions began November 26, 1928, and closed December 5, 1928. Subsequently briefs were submitted but at the time of the printing of this report the Commission had not announced its decision.

In pursuance of the action taken by the Stockholders at its annual meeting April 17, 1928, your Company authorized the execution and delivery of its Refunding and Improvement Mortgage dated April 1, 1928, to Guaranty Trust Company of New York and Herbert Fitzpatrick, Trustees, and created a series of bonds known as Refunding and Improvement Mortgage 4½ per cent Gold Bonds, Series A, in the principal amount of $30,000,000, dated October 1, 1928, to mature October 1, 1993, and on November 16, 1928, filed application with the Interstate Commerce Commission for an order authorizing and approving said issue. Under date of January 18, 1929, the Commission handed down its report and order authorizing the issue and sale of $24,784,000 principal amount of said bonds.

The changes in funded debt in the hands of the public during the year were as follows:

	Retired
4 per cent Raleigh and Southwestern R'y Co. First Mortgage Bonds	$ 6,000.00
4 per cent Greenbrier Railway First Mortgage Bonds	8,000.00
4 per cent Big Sandy Railway First Mortgage Bonds	43,000.00
4 per cent Coal River Railway First Mortgage Bonds	26,000.00
5 per cent Kanawha Bridge and Terminal Company First Mortgage Bonds	8,000.00
Equipment Trust Obligations	3,694,800.00
Decrease	$3,785,800.00

General Remarks

The revenue coal and coke tonnage was 53,931,420, a decrease of 8.7 per cent; other freight tonnage was 12,004,239, an increase of 0.2 per cent. Total revenue tonnage was 65,935,659 tons, a decrease of 7.2 per cent. Freight revenue was $112,841,735.71, a decrease of 5.3 per cent. Freight train mileage was 13,274,764 miles, a decrease of 7.2 per cent. Revenue ton miles were 18,186,579,973, a decrease of 5.9 per cent. Ton mile revenue was 6.20 mills, an increase of 0.5 per cent. Revenue per freight train mile was $8.500, an increase of 2.0 per cent. Revenue tonnage per train mile was 1,370 tons, an increase of 1.4 per cent; including Company's freight, the tonnage per train mile was 1,433 tons, an increase of 1.6 per cent. Tonnage per locomotive mile, including Company's freight, was 1,281 tons, an increase of 2.0 per cent. Revenue tonnage per loaded car was 40.9 tons, a decrease of 0.2 per cent. Tons of revenue freight carried one mile per mile of road were 6,677,650, a decrease of 7.5 per cent.

There were 3,931,443 passengers carried, a decrease of 23.3 per cent. The number carried one mile was 208,799,317, a decrease of 16.0 per cent. Passenger Revenue was $7,082,773.03, a decrease of 17.2 per cent. Revenue per passenger mile was 3.392 cents, a decrease of 1.5 per cent. Number of passengers carried one mile per mile of road was 82,585, a decrease of 17.1 per cent. Passenger train mileage was 5,516,163, a decrease of 0.2 per cent. Passenger revenue per train mile was $1.284, a decrease of 17.1 per cent; including mail and express it was $1.652, a decrease of 14.6 per cent. Passenger Service Train Revenue per train mile was $1.701, a decrease of 14.6 per cent.

Operating Expenses decreased $7,189,787.95, or 8.0 per cent. Transportation Expenses decreased $2,879,173.47, or 8.1 per cent. Ratio of Transportation Expenses to Operating Revenues was 26.1 per cent in 1928 and 26.7 per cent in 1927. Revenue ton miles decreased 5.9 per cent.

Equipment, Roadway, Track and Structures were maintained in good condition throughout the year.

There were 55,149.1 tons of new rail (24,114.6 tons 130 lb., 31,032.3 tons 100 lb., 2.2 tons 90 lb.), equal to 315.5 miles of track used in renewal of existing track, an increase of 39.7 miles of track renewed with new rail.

There were 1,010,656 cross ties used in maintaining existing tracks, a decrease of 148,062. This decrease was occasioned by the application of creosoted ties.

There were 781,962 cubic yards of ballast (334,184 cubic yards stone), used in maintaining existing tracks, a decrease of 89,815 cubic yards.

The average amount expended for repairs per locomotive was $9,832.76, a decrease of 2.1 per cent under 1927, per passenger train car $1,849.65, a decrease of 22.5 per cent under 1927, per freight train car $152.74, a decrease of 13.9 per cent.

During the year second track between Gill and Harts, a distance of 5.48 miles, on the Logan Sub-division, was completed and put in operation.

At Thurmond, W. Va., a passing track was built to hold 100 cars; at Russell, Ky., 10 additional radial tracks were built and at Huntington, W. Va., two yard tracks and additional switching lead was constructed.

At Covington, Va., connection was made into new plant of the Industrial Rayon Corporation, including bridge across Jackson River.

At Reusens, Va., heavier steel superstructure was provided for Bridge No. 1490-A and Bridge No. 1581-A at the same point was filled and replaced with culvert; at Quinnimont, W. Va., the east abutment of Bridge No. 3787 was rebuilt, and at Ethel, W. Va., Bridge No. 1, Dingess Run Branch and Bridge No. 39, Georges Creek Branch, were rebuilt. Bridges on the Loup Creek, White Oak and Price Hill Sub-division were strengthened for Mallet engines.

New signal and interlocking improvements were—Flasher light signals at Covington, Va., Alderson, W. Va., Huntington, W. Va., and Lee Hall, Va. Fort Springs, W. Va., two new automatic semaphore signals to decrease length of blocks; Cheviot to Brighton, O., new automatic color light signals and interlocking facilities at Brighton, O.; St. Albans, W. Va., takesiding signal at passing siding; Talcott, W. Va., to Hilldale, W. Va., re-construction of two interlockings with color light signals and traffic locking through Big Bend Tunnel; Alleghany, W. Va., to Jerrys Run, W. Va., re-construction of two interlockings with color light signals and traffic locking through Lewis Tunnel; Hilldale, W. Va., remote control of passing siding switch; Lockbourn, O., new interlocking at crossing with electric traction Company; Ona, W. Va., new interlocking to protect movements through gauntlet in Ona Tunnel; Ranger, W. Va., new interlocking at end of double track; Gill, W. Va., new interlocking at end of double track; Richmond, Va., reconstruction of terminal interlocking; Gordonsville, Va., additional signal and interlocking facilities; Rittenour, O., new interlocking plant at junction with B. & O.; Vauces, O., new interlocking plant at junction with B. & O.

The number of water treating plants was increased from 35 to 46, of which those at Economy, Ind., Martin, Ky., and Whitman Junction, W. Va., were complete new water stations including 100,000 gallon steel tanks and modern pumping equipment. Approximately 55 per cent of the water used for boiler purposes on the system was treated. Old 50,000 gallon wood water tank at Balcony Falls, Va., was replaced with modern steel tank of 200,000 gallon capacity; at Richardson, Prestonburg and Stony Point, Ky., old 50,000 gallon wood tanks were replaced with 100,000 gallon steel tanks. At Wylo and Danville, W. Va., complete new automatic pumping plants were installed with new water tanks. At Leckie, W. Va., a new gravity water station was placed in service. Additional storage tanks and modern pumping equipment was installed at Lake Bruce and Griffith, Ind. The old stations at Afton and Mineral, Va., Madison and Holden, W. Va., Hoovers and H. Y. Tower, Ind., were abandoned.

[Advertisement]

Chesapeake & Ohio Railroad Company, General Balance Sheet, December 31, 1928

(Excluding Stocks and Bonds Owned of The C. & O. R'y Co. of Indiana and of The C. & O. Equipment Corporation.)

Assets

	Unpledged.	Pledged.	
Investments.			
Investment in Road and Equipment:			
Road			$245,712,517.73
Equipment			131,165,864.62
Improvements on Leased Railway Property			495,167.08
Sinking Funds			366,572.58
Deposits in lieu of Mortgaged Property Sold			185,088.96
Miscellaneous Physical Property			1,029,723.03
Investments in Affiliated Companies.			
Stocks	$37,427,897.90	$11,213,999.44	$ 48,641,897.34
Bonds	6,569,874.75	2,180,001.00	8,749,875.75
Notes	13,500,000.00	1.00	13,500,001.00
Advances	8,185,709.11		8,185,709.11
			$ 79,077,483.20
Other Investments.			
Stocks	15,502.00		15,502.00
Bonds	83,751.00	385,000.00	468,751.00
Notes	1.00		1.00
Advances	54,970.81		54,970.81
Miscellaneous	1,700.00		1,700.00
Total Investments			$458,573,342.01
Current Assets.			
Cash in Treasury			$ 5,722,411.87
Cash in transit			714,056.07
Cash Deposit—Preferred Stock, Series "A" Proceeds			70,487.62
Cash Deposit—Special Fund for Additions and Betterments, New Equipment, Branch Lines, etc.			5,583,550.28
Cash Deposits to pay Interest and Dividends			3,686,005.54
Cash Deposits to redeem General Funding and Improvement 5% Bonds			3,698,000.00
Miscellaneous Cash Deposits			35,599.93
Loans and Bills Receivable			427,701.81
Traffic and Car Service Balances Receivable			4,591,294.06
Net Balance Receivable from Agents and Conductors			652,316.33
Miscellaneous Accounts Receivable			1,842,617.16
Material and Supplies			3,802,615.22
Interest and Dividends Receivable			167,198.47
Rents Receivable			14,141.41
Other Current Assets			37,025.58
Total Current Assets			$ 31,045,021.35
Deferred Assets.			
Working Fund Advances			$ 10,949.93
Insurance and Other Funds			308,674.21
Other Deferred Assets			77,244.95
Total Deferred Assets			$ 396,869.09
Unadjusted Debits.			
Rents and Insurance Premiums Paid in Advance			$ 56,503.96
Other Unadjusted Debits			3,257,919.54
Securities Issued or Assumed:			
Common Capital Stock (see Contra)	$ 11,000.00		
First Lien and Improvement 5% Mtge. Bonds (see Contra)	51,716,000.00	23,329,000.00	75,045,000.00
General Mortgage 4½% Bonds (see Contra)	552,000.00	487,000.00	1,039,000.00
First Mortgage R. & S. W. Railway 4% Bonds (see Contra)	40,000.00		40,000.00
Total Unadjusted Debits			$ 79,438,423.50
Grand Total			$569,453,655.95

This Company is also liable as a guarantor of the following securities:

Western Pocahontas Fuel Co. Coupon 5% Notes. Due 1919 and 1921 ($500,000 each year) owned by this Company	$ 1,000,000.00
The Chesapeake and Ohio Grain Elevator Co. First Mortgage 4% Bonds due 1938	820,000.00
Richmond-Washington Co. Collateral Trust Mortgage (C. & O. prop'n ⅓) 4% Bonds due 1943	10,000,000.00
Western Pocahontas Corporation, First Mortgage 4½% Bonds due 1945	750,000.00
Western Pocahontas Corporation, Extension Mortgage No. 1, 4½% Bonds due 1945	102,000.00
Western Pocahontas Corporation, Extension Mortgage No. 2, 4½% Bonds due 1946	51,000.00
Norfolk Terminal and Transportation Company First Mortgage 5% Bonds due 1948	500,000.00
Sewell Valley Railroad Company First Mortgage 5% Bonds due 1938	300,000.00

Liabilities

Capital Stock.		
Common	$118,105,091.66	
6½% Cumulative Convertible Preferred Stock—Series A	899,800.00	
First Preferred (to be retired under plan of February 23, 1892)	3,000.00	
Second Preferred (to be retired under plan of February 23, 1892)	200.00	
Common—The Chesapeake and Ohio Railway Company of Indiana	1,200.00	
	$119,009,291.66	
Less—Held by or for the Company at date (Common) (see Contra)	11,000.00	
Total Stock Outstanding with public		$118,998,291.66
Funded Debt.		
General Funding and Improvement 5% Bonds—1929	$3,698,000.00	
Convertible 4½% Bonds—1930	31,390,000.00	
First Mortgage R. & S. W. Railway 4% Bonds—1936	761,000.00	
First Consolidated Mortgage 5% Bonds—1939	30,000,000.00	
First Mortgage, Craig Valley Branch 5% Bonds—1940	650,000.00	
First Mortgage, Greenbrier Railway, 4% Bonds—1940	1,580,000.00	
First Mortgage, Warm Springs Branch, 5% Bonds—1941	400,000.00	
First Mortgage, Big Sandy Railway, 4% Bonds—1944	3,939,000.00	
First Mortgage, Paint Creek Branch, 4% Bonds—1945	539,000.00	
First Mortgage, Coal River Railway, 4% Bonds—1945	2,388,000.00	
First Mortgage, C. & O. Northern Railway Company, 5% Bonds—1945	1,000,000.00	
First Mortgage, Potts Creek Branch, 4% Bonds—1946	600,000.00	
First Mortgage, Kanawha Bridge & Terminal Company, 5% Bonds—1948	416,000.00	
First Mortgage, Virginia Air Line Railway, 5% Bonds—1952	900,000.00	
First Mortgage, R. & A. Division, 4% Bonds—1989	6,000,000.00	
Second Mortgage, R. & A. Division, 4% Bonds—1989	1,000,000.00	
General Mortgage 4½% Bonds—1992	48,129,000.00	
Secured Obligations—Account final settlement Federal Control Period—1930	9,200,000.00	
Secured Obligations to U. S. Government—1931	6,738,523.97	
Secured Obligations to U. S. Government—1932	1,334,500.00	
Equipment Trust Obligations	34,896,600.00	
Total Funded Debt outstanding with public		$185,559,623.97
		$304,557,915.63
Held by or for the Company at date (see Contra)		
First Lien and Improvement 5% Mortgage Bonds—1930	$75,045,000.00	
General Mortgage 4½% Bonds—1992	1,039,000.00	
First Mortgage, R. & S. W. Railway, 4% Bonds—1936	40,000.00	
		76,124,000.00
Current Liabilities.		
Traffic and Car Service Balances Payable	$356,154.63	
Audited Accounts and Wages Payable	8,665,476.22	
Miscellaneous Accounts Payable	405,833.95	
Interest Matured Unpaid	670,207.40	
Dividends Matured Unpaid	2,981,790.00	
Funded Debt Matured Unpaid	17,674.17	
Unmatured Interest Accrued	2,129,505.25	
Unmatured Rents Accrued	254,806.38	
Other Current Liabilities	98,695.59	
Total Current Liabilities		15,580,143.59
Deferred Liabilities.		
Other Deferred Liabilities	$359,405.88	
Total Deferred Liabilities		359,405.88
Unadjusted Credits.		
Tax Liability	$5,945,779.45	
Insurance and Casualty Reserves	308,674.21	
Accrued Depreciation—Road	403,056.27	
Accrued Depreciation—Equipment	37,338,229.22	
Other Unadjusted Credits	4,348,539.18	
Total Unadjusted Credits		48,344,278.33
Corporate Surplus.		
Additions to Property through Income and Surplus	$25,639,910.23	
Funded Debt retired through Income and Surplus	878,378.28	
Sinking Fund Reserve	366,572.58	
Total Appropriated Surplus	$26,884,861.09	
Profit and Loss—Credit Balance	97,603,051.43	
Total Corporate Surplus		124,487,912.52
Grand Total		$569,453,655.95

[Advertisement]

At Danville, W. Va., engine terminal was constructed consisting of coaling station, cinder conveyor and tracks.

At Martins, Ky., an engine terminal was constructed consisting of coaling station, cinder conveyor and tracks.

At Handley, W. Va., old 100-ft. balanced type turntable was replaced with 115-ft. twin-span turntable.

At Jenkins, Ky., a combined freight and passenger station was constructed and at Allen, Ky., an addition was made to the existing depot.

Good progress was made during the year in the project of rebuilding bridges Newport, Ky., to K. C. Junction, Ky., separating the grades through Covington, Ky., and rebuilding the bridge over the Ohio River between Covington, Ky., and Cincinnati, Ohio, double-tracking Interterminal Railroad and double-tracking Wood Street Incline of the Covington and Cincinnati Elevated Railroad and Transfer and Bridge Company in Cincinnati, Ohio, which work was started in 1927. The rebuilding of the bridges between Newport and K. C. Junction and construction of the new undergrade crossings at Madison Avenue and 6th Street was completed. The work of grade separation through Covington, rebuilding the bridge over Ohio River, double-tracking Cincinnati Interterminal and the conversion of the present bridge over the Ohio River into highway bridge will be completed during 1929.

During the year grade crossing with streets and public highways were eliminated at the following points: Hewlett, Va., highway relocated to eliminate two grade crossings; Cotton Hill, W. Va., overhead highway bridge to eliminate grade crossing; Barboursville, W. Va., undergrade crossing at Central Avenue; Allen, Ky., overhead highway bridge; Chapmanville to Pecks Mill, W. Va., state road changed to eliminate two grade crossings near Phico, W. Va.

In addition to the above, grade separation work at the following points is under way and the work will be completed during the coming year: Callaghan, Va., undergrade crossing; Boy's Home, Va., overhead highway bridge; Avis, W. Va., overhead highway bridge; Stone Cliff, W. Va., overhead highway bridge; Prudence, W. Va., change County Road to eliminate two grade crossings; Chapmanville, W. Va., change state road near MP-53 to eliminate two grade crossings; Charleston, W. Va., concrete ramp at passenger station to eliminate two grade crossings; Prestonburg, Ky., rearrange and extend depot and construct two highway bridges and undergrade crossing; Shelby, Ky., overhead highway bridge; Netherland, Ky., overhead highway bridge; Miami, Ohio, overhead bridge at Harrison Pike.

Other important improvements started during the years 1927 or 1928 which have not been completed are: Greenwood, Va., construct new Brookville Tunnel; Ona, W. Va., convert Ona Tunnel into open cut; Rupert, W. Va., construct branch line up Big Clear Creek of Sewell Valley Railway a distance of approximately 12 miles and the strengthening of Bridge No. 59 on Rupert Sub-division for Mallet engines; Chicago, Ill., purchase and rehabilitation of Calumet grain elevators.

Reference is made to the hearings on the valuation of The Chesapeake and Ohio Railway Company, The Chesapeake and Ohio Railway Company of Indiana, and its several subsidiaries as of valuation date, June 30, 1916, before the Interstate Commerce Commission. Up to the time of the printing of this report, no decision with respect to these valuations has been announced by the Interstate Commerce Commission.

Among the new industries established along your line during the year were the following:

6 Manufacturers of Farm Implements and Farm Products.
20 Manufacturers of Lumber and Lumber Products.
180 Manufacturers of Mineral, Metal and other products, including warehouses, etc.

Your Directors acknowledge the great appreciation of the Company for the faithful and efficient services of its officers and employees.

By order of the Board of Directors.

O. P. VAN SWERINGEN, Chairman. W. J. HARAHAN, President.

The Hocking Valley Railway Company, Thirtieth Annual Report

Columbus, Ohio, March 4, 1929.

To the Shareholders:

The Thirtieth Annual Report of the Board of Directors, for the fiscal year ended December 31, 1928, is herewith submitted.

The average mileage operated during the year was 348.57 miles, the same as the average mileage operated during the previous year. The mileage at the end of the year was 348.57 miles.

Results for the Year

Operating Revenues		$20,801,231.79
(Decrease $241,283.58 or 1.15%.)		
Operating Expenses		12,677,629.19
(Decrease $830,586.59 or 6.15%.)		
Net Operating Revenue		$ 8,123,602.60
(Increase $589,303.01 or 7.82%.)		
Taxes and Uncollectible Railway Revenue		1,527,369.14
(Increase $4,749.52 or .31%.)		
Railway Operating Income		$ 6,596,233.46
(Increase $584,553.49 or 9.72%.)		
Net Equipment and Joint Facility Rents,—Dr.		971,487.88
(Decrease $109,426.29 or 10.12%.)		
Net Railway Operating Income		$ 5,624,745.58
(Increase $693,979.78 or 14.07%.)		
Other Income		218,988.23
(Decrease $24,781.96 or 10.17%.)		
Total Gross Income		$ 5,843,733.81
(Increase $669,197.82 or 12.93%.)		
Rentals and Other Payments		55,190.18
(Decrease $3,591.99 or 6.11%.)		
Income for the year available for interest		$ 5,788,543.63
(Increase $672,789.81 or 13.15%.)		
Interest (19.92% of amount available)		1,152,849.52
(Decrease $211,511.25 or 15.50%.)		
Income Balance, for the year		$ 4,635,694.11
Dividends paid during the year:		
Four dividends of 2½% each, aggregating		1,099,950.00
Balance, devoted to improvement of physical and other assets		$ 3,535,744.11

Financial

The changes in funded debt shown by balance sheet of December 31, 1928, as compared with December 31, 1927, consisted of (a) the payment of $627,228.02 on equipment trusts, and (b) the retirement and cancellation, by the Trustee, of $1,000 face amount First Consolidated Mortgage Four and one-half Per Cent. Gold Bond, through the Sinking Fund provision of the mortgage.

An analysis of the property accounts will be found on pages 14 and 15, by reference to which it will be seen that a net addition of $947,798.36 was made during the year, of which $1,728,047.59 was added to cost of road, and $780,249.23 was deducted from cost of equipment.

General Remarks

There were 18.90 miles of additional second main track completed and placed in service between Longley and LeMoyne, being all new construction with the exception of 5.67 miles of track formerly used for siding purposes. This completes construction of second track on the Toledo Division. Two center sidings (each of 125 cars capacity) were completed and placed in service on the Toledo Division at Bradner and Pemberville.

New South Bound Yard at Walbridge, consisting of 23.63 miles of track, and 0.81 miles of yard tracks at Parsons were completed and placed in service.

Modern water treating plants of large capacity, replacing old facilities, were completed and placed in service at Marion and Parsons. A 350,000 gallon steel water tank was completed and placed in service at the south end of Parsons Yard. Erection of a 50,000 gallon steel water tank at Starr, replacing a 40,000 gallon wooden tank, which was reported as being under way in 1927, was completed and placed in service in 1928. A 60,000 gallon wooden water tank was erected and placed in service at B. & O. Crossing, Fostoria.

Floodlighting systems were installed and placed in service at Walbridge and Parsons Yards.

Automatic Block Signals were installed and placed in service between Valley Crossing and Fifth Avenue, Columbus, covering approximately 8.20 miles of road.

Modern flasher light tvpe highway crossing signals, replacing crossing watchmen, were installed at Logan. Modern flasher light type highway crossing signals were installed at Upper Sandusky, Marion, Powell (2), Canal Winchester, Nelsonville and Kimberly.

	1928	1927		
Operating Revenues were	$20,801,231.79	$21,042,515.37	Dec.	$241,283.58
Net Opr. Revenues were	8,123,602.60	7,534,299.59	Inc.	589,303.01
Operating Ratio	60.9%	64.2%	Dec.	3.3%
Tons of Revenue Freight carried One Mile	2,996,101,645	2,902,014,167	Inc.	94,087,478
Revenue Train Load—Tons	1,762	1,712	Inc.	50
Revenue Tons per Loaded Car	48.0	48.2	Dec.	.2

[Advertisement]

The revenue coal and coke tonnage was 22,787,206 tons, an increase of 7.4%; other revenue freight tonnage was 4,072,216 tons, a decrease of 1.6%. Total revenue tonnage was 26,859,422 tons, an increase of 5.9%. Freight revenue was $18,177,574.20, a decrease of 0.1%. Freight train mileage was 1,700,833 miles, an increase of 0.4%. Revenue ton miles were 2,996,101,645, an increase of 3.2%. Ton mile revenue was 6.07 mills, a decrease of 3.2%. Revenue per freight train mile was $10.687, a decrease of 0.5%. Revenue tonnage per train mile was 1,762 tons, an increase of 2.9%; including Company's freight, the tonnage per train mile was 1,806 tons, an increase of 2.9%. Tonnage per locomotive, including Company's freight, was 1,547 tons, an increase of 4.6%. Revenue tonnage per loaded car was 48.0 tons, a decrease of 0.4%. Tons of revenue freight carried one mile per mile of road were 8,677,561, an increase of 3.2%.

There were 288,552 passengers carried, a decrease of 19.7%. The number of passengers carried one mile was 22,363,830, a decrease of 11.6%. Passenger revenue was $720,144.33, a decrease of 9.7%. Revenue per passenger per mile was 3.220 cents, an increase of 2.2%. The number of passengers carried one mile per mile of road was 65,815, a decrease of 11.6%. Passenger train mileage was 648,235, a decrease of 7.8%. Passenger revenue per train mile was $1.111, a decrease of 2.0%; including mail and express it was $1.421, a decrease of 1.9%. Passenger service train revenue per train mile was $1.462, a decrease of 2.0%. References were made in reports for last five years to the decrease in the number of local passengers carried and in the revenue therefrom due to the establishment of motor bus lines and increased use of private motor cars. In 1928 there was a further decrease of 24.9% in the number of local passengers carried and 13.1% in the revenue therefrom due partly to the same causes. There was a decrease of 4.9% in the revenue from through passengers.

There were 4,132 tons of new 130-lb. rails, equal to 20.23 track miles, 3,263 tons of new 100-lb. rails, equal to 20.76 track miles, and 1 ton of new 90-lb. rails, equal to 0.1 track miles, used in existing main tracks.

There were 275,899 cross ties and 102,651 yards of ballast used in maintaining existing tracks, a decrease of 22,871 cross ties and a decrease of 10,139 yards of ballast.

The average amount expended for repairs per locomotive was $10,931.29, a decrease of 6.8%; per passenger train car $2,408.97, a decrease of 27.4%; and per freight train car $127.12, a decrease of 0.3%.

Appreciative acknowledgment is hereby made to officers and employees for their efficient service during the year.

By order of the Board of Directors:

O. P. VAN SWERINGEN, Chairman. W. J. HARAHAN, President.

Hocking Valley Railway Company, General Balance Sheet, December 31, 1928

Assets

Investments.		
Investment in Road and Equipment:		
Road	$41,692,325.26	
Equipment	16,960,869.34	
		$58,653,194.60
Deposits in Lieu of Mortgaged Property Sold (Includes $793,674.83,—see Contra)		1,086,236.46
Investments in Affiliated Companies,—Pledged:—		
Stocks	$ 1.00	
Bonds	300,000.00	
		300,001.00
Investments in Affiliated Companies,—Unpledged:—		
Stocks	$ 694.00	
Bonds	196,451.80	
Notes	1,485,000.00	
Advances	308,569.84	
		1,990,715.64
Other Investments:—		
Bonds		326,000.00
Total Investments		$62,356,147.70
Current Assets.		
Cash	$ 1,818,776.16	
Time Drafts and Deposits	1,511,903.39	
Special Deposits	399,040.00	
Traffic and Car Service Balances Receivable	946,823.66	
Net Balance Receivable from Agents and Conductors	142,071.64	
Miscellaneous Accounts Receivable	430,309.53	
Material and Supplies	670,849.05	
Interest and Dividends Receivable	44,420.35	
Other Current Assets	2,986.93	
		5,967,180.71
Deferred Assets.		
Working Fund Advances	$ 4,497.95	
Insurance and Other Funds	120,847.83	
		125,345.78
Unadjusted Debits.		
Rents and Insurance Premiums paid in Advance	$ 3,626.83	
Other Unadjusted Debits	198,551.75	
Securities Issued or Assumed—Unpledged:—		
Capital Stock—Common (see Contra)	$ 500.00	
General Mortgage 6% Bonds (see Contra)	12,801,000.00	
	12,801,500.00	
		13,003,678.58
Total		$81,452,352.77

Liabilities

Capital Stock.—Common (Includes $500.00,—see Contra)		$11,000,000.00
Funded Debt.		
First Consolidated Mortgage 4½% Bonds 1999	$15,888,000.00	
First Mortgage C. & H. V. R. R. 4% Bonds 1948	1,401,000.00	
First Mortgage C. & T. R. R. 4% Bonds 1955	2,441,000.00	
Equipment Trust Obligations	6,072,674.83	
(Includes $793,674.83,—see Contra)		25,802,674.83
		$36,802,674.83
Held by or for the Company:— General Mortgage 6% Bonds (see Contra)		12,801,000.00
Other Debt.		
Non-negotiable Debt to Affiliated Companies:— Open Accounts		72,806.13
Working Liabilities.		
Traffic and Car Service Balances Payable	$ 742,950.67	
Audited Accounts and Wages Payable	1,243,252.01	
Miscellaneous Accounts Payable	53,361.66	
Interest Matured Unpaid	400,072.50	
Unmatured Interest Accrued	124,575.83	
Other Working Liabilities	11,975.55	
		2,576,188.22
Deferred Liabilities. Other Deferred Liabilities		38,479.08
Unadjusted Credits.		
Tax Liability	$ 1,099,801.64	
Insurance and Casualty Reserves	120,847.83	
Accrued Depreciation—Equipment	5,078,851.79	
Other Unadjusted Credits	609,951.13	
		6,909,452.39
Corporate Surplus.		
Additions to Property through Income and Surplus	$ 325,435.83	
Funded Debt Retired through Income and Surplus	138,756.90	
Miscellaneous Fund Reserves	41,091.78	
Appropriated Surplus not Specifically Invested	13,405.25	
Total Appropriated Surplus	$ 518,689.76	
Profit and Loss,—Credit Balance	21,733,062.36	
		22,251,752.12
Total		$31,452,352.77

[ADVERTISEMENT]

Railway Finance

(*Continued from page 869*)

LOUISVILLE & NASHVILLE.—*New Director Elected.*—H. L. Borden, vice-president and secretary, Atlantic Coast Line, New York, has been elected a member of the board of directors of this railroad to succeed the late John J. Waterbury of Morristown, N. J.

MAINE CENTRAL.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $1,628,000 of 4½ or 5 per cent equipment trust certificates, to be sold to the highest bidder.

MANUFACTURERS RAILWAY.—*Use of Facilities Owned by the City of St Louis.*—The Interstate Commerce Commission in November authorized this company to operate over certain tracks and other facilities owned by the city of St. Louis but stated that its approval should not take effect until the compensation to be paid had also been approved. A detailed schedule of such compensation has now been approved and the original certificate takes effect.

MCCLOUD RIVER.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to purchase a track from the McCloud River Lumber Company, from Car A to Hambone, in Siskiyou county, Calif., 6.9 miles.

NORTHERN PACIFIC.—*New Directors*

Elected.—B. W. Scandrett, vice-president of this railroad at St. Paul, Minn., and E. A. Gay, secretary and assistant treasurer at New York, have been elected directors, succeeding Theodore F. Merseles, deceased and Charles E. Perkins, resigned.

CHICAGO & WESTERN INDIANA.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $461,886 as compared with net income in 1927 of $480,317. Selected items from the income statement follow:

CHICAGO & WESTERN INDIANA

	1928	1927	Increase or Decrease
RAILWAY OPERATING REVENUES	258,435	332,550	— 74,115
Maintenance of way	21,501	27,481	— 5,980
Maintenance of equipment	187,695	197,460	— 9,765
Transportation	185,508	191,613	— 6,105
TOTAL OPERATING EXPENSES	404,399	445,698	— 41,299
Operating ratio	156.48	134.02	22.46
NET LOSS FROM OPERATIONS	145,965	113,149	32,816
Hire of freight cars—Dr.	8,595	16,816	8,221
Joint facility rents	2,421,170	2,349,282	71,888
NET RAILWAY OPERATING INCOME	not shown		
Non-operating income	4,677,417	4,585,900	91,517
GROSS INCOME	4,531,452	4,472,752	58,701
Rent for leased roads	48,675	48,675	.....
Interest on funded debt	3,231,012	3,201,297	29,715
TOTAL DEDUCTIONS FROM GROSS INCOME	4,069,566	3,992,434	77,132
NET INCOME	461,886	480,317	— 18,431
Surplus for year carried to profit and loss	461,886	480,317	— 18,431

NEW YORK, NEW HAVEN & HARTFORD.—*Annual Report.*—The annual report of this company for 1928 shows consolidated net income of $16,887,909 after interest and other charges, equivalent after 7 per cent preferred dividends and deducting $974,129 guarantees, etc., to $8 a share on outstanding common stock. This compares with net income in 1927 of $10,432,661 or $5.49 a share on common stock, after payment of one quarterly dividend on the preferred and guarantees amounting to $974,523. Selected items from the income statement appear at the bottom of this page.

NEW YORK, ONTARIO & WESTERN.—*Annual Report.*—The 1928 annual report of this company shows net income after interest and other charges of $159,669, as compared with net income in 1927 of $5,631. Selected income items follow:

NEW YORK, ONTARIO & WESTERN

	1928	1927	Increase or Decrease
RAILWAY OPERATING REVENUES	12,650,717	13,157,620	— 506,903
Maintenance of way	1,807,764	1,971,657	— 163,893
Maintenance of equipment	2,359,986	2,610,149	— 250,163
Transportation	5,616,445	5,695,969	— 79,524
TOTAL OPERATING EXPENSES	10,496,821	10,972,046	— 475,225
Operating ratio	82.97	83.39	— .42
NET REVENUE FROM OPERATIONS	2,153,896	2,185,574	— 31,678
Railway tax accruals	529,631	455,856	73,775
Railway operating income	1,622,787	1,726,945	— 104,158
Equipment rents	611,383	567,905	43,478
Joint facility rents	97,826	92,903	4,923
NET RAILWAY OPERATING INCOME	913,577	1,066,137	— 152,560
Non-operating income	369,431	353,595	15,836
GROSS INCOME	1,283,008	1,419,732	— 136,724
Rent for leased roads	227,875	220,844	7,031
Interest on funded debt	1,155,526	1,156,925	— 1,399
TOTAL DEDUCTIONS FROM GROSS INCOME	1,442,677	1,414,101	28,576
NET INCOME	159,669	5,631	154,038

OKLAHOMA CITY-ADA-ATOKA.—*Acquisition of Controlling Interest.*—Officers of this company on April 3 announced the purchase of a controlling interest in it by a group headed by Charles E. Ingersol, of Philadelphia, Pa., for about $2,200,000.

PENNSYLVANIA.—*Stock Increase Authorized.*—The annual meeting of the stockholders of this company in Philadelphia on April 9 authorized an increase of $100,000,000 in the capital stock of the company, which would bring its total stock up to $700,000,000. Allotments of stock to stockholders and employees during 1928 exhausted all but $21,000,000 of the heretofore authorized stock and the new authorization puts the board of directors in a position to meet future capital requirements through further stock issues as additional funds become necessary. The meeting passed a resolution in tribute to the late Samuel Rea, retired president of the company, who died on March 24.

PITTSBURGH & WEST VIRGINIA.—*Bonds.*—Brown Bros. & Co., Stone & Webster and Blodget, Inc., have offered $3,000,000 of first mortgage 4½ per cent bonds, Series B, of this company to be dated April 1, 1929, and to mature 30 years thereafter. The issue is priced at 94, to yield 4.88 per cent.

SLIGO & EASTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Sligo to Rulon and Buick, Mo., 33.3 miles, including the private log road of the Sligo Furnace Company.

SOUTHERN.—*I. C. C. Charges Violation of Clayton Law.*—The Interstate Commerce Commission has issued a complaint against this company charging "on information and belief" that it has violated section 7 of the Clayton anti-trust law on two counts. The first relates to the acquisition in 1901 of control of the Mobile and Ohio and the second to the acquisition of control of the New Orleans & Northeastern in 1916, "without the approval and authorization of the Interstate Commerce Commission." It is stated that the Southern has acquired 56,702 shares of stock of the Mobile & Ohio out of a total of 60,168, and $7,957,000 of its general mortgage bonds, and 59,801 shares out of a total of 60,000 shares of the common stock of the N. O. & N. E., and that the effect may be to substantially lessen competition between the Southern and the other roads involved. The Southern is given the right to show cause at a hearing on May 20 why an order should not be issued by the commission requiring it to divest itself of all interest in the stock of the two companies.

SOUTHERN PACIFIC. — *Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a part of its Mill City branch, from Albany to Shelburn, Ore., 13.27 miles.

SOUTHERN PACIFIC.—*Election of New Directors.*—John F. Harris of New York, Jackson E. Reynolds, president, First National Bank of the City of New York, and Charles E. Perkins, chairman of the board, First Iowa State Trust & Savings Bank, Burlington, Iowa, have been elected

NEW YORK, NEW HAVEN & HARTFORD

	1928	1927	Increase or Decrease
Average mileage operated	2,148.97	2,174.58	25.61
RAILWAY OPERATING REVENUES	137,633,053	139,824,315	—2,191,262
Maintenance of way and structures	19,317,596	19,050,871	266,725
Maintenance of equipment	23,870,299	26,694,508	—2,824,208
Transportation	43,878,799	47,409,755	—3,530,956
TOTAL OPERATING EXPENSES	94,148,641	100,278,252	—6,129,610
Operating ratio	68.41	71.72	— 3.31
NET REVENUE FROM OPERATIONS	43,484,412	39,546,063	3,938,349
Railway tax accruals	7,493,995	6,435,364	1,058,631
Railway operating income	35,896,782	33,091,660	2,805,122
Equipment rents—Dr.	2,636,426	3,287,638	— 651,212
Joint facility rents—Dr.	4,482,663	4,568,737	— 86,075
NET RAILWAY OPERATING INCOME	29,238,404	25,235,284	4,003,120
Non-operating income	4,861,903	3,604,089	1,257,814
GROSS INCOME	34,100,307	28,839,373	5,260,934
Rent for leased roads	2,766,730	2,722,556	44,174
Interest on funded debt	13,132,948	15,135,193	—2,002,245
TOTAL DEDUCTIONS FROM GROSS INCOME	17,212,397	18,406,711	—1,194,314
NET INCOME	16,887,909	10,432,661	6,455,248
Disposition of net income			
Dividends on 7% cumulative preferred stock	3,343,259	.....	.....
Dividends on common stock	4,713,537	.....	.....
Surplus for year carried to profit and loss	13,759,629	.....	.....

directors of this company to fill the vacancies caused by the deaths of J. Horace Harding, Ogden Mills and Samuel Rea, J. P. Blair, general counsel, and George M. Thornton, treasurer of the Southern Pacific have been elected directors to succeed William Sproule, retired president, and L. J. Spence, retired executive officer.

TENNESSEE, ALABAMA & GEORGIA.—*Purchase.*—This line has been purchased by a New York syndicate and will be operated by the consulting engineering firm of Coverdale & Colpitts, according to announcement of John A. Chambliss of Chattanooga, Tenn. Mr. Chambliss said in part:

I feel that I am at liberty to say that this active backing of the road by those who have resources and also experience will mean its rehabilitation in the very near future. I have taken pains recently to deny that heavier steel would be laid on the railroad this summer, but I now feel, since this syndicate has been formed, that I can prophesy the laying of heavier steel in the very near future and the subsequent purchase of more effective equipment.

The railroad has been wonderfully supported by Chattanooga shippers since I took it over and I feel that I cannot let this opportunity pass to say that in the support of this railroad I have seen a demonstration of loyalty and helpfulness on the part of the Chattanooga shippers that has been a revelation to me. I think they have given this support not merely because they realize that a new opening into the south will be an immense advantage to Chattanooga, but also they have felt that the railroad was a Chattanooga institution, entitled to the support of those in Chattanooga.

The bridge which we recently built at Yellow creek has been entirely completed and was a successful piece of construction in every way. The probability is that in the near future we will be able to do away with some of the long and high trestles near the ore mines at Estelle, and build them so as to put the road in condition where a much heavier tonnage can be carried over it.

PENNSYLVANIA RAILROAD.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $82,507,613, equivalent to $7.34 a share on outstanding $50 par value common stock. This compares with net income in 1927 of $68,160,296, or 6.82 a share. Selected items from the income statement follow:

PENNSYLVANIA RAILROAD

	1928	1927	Increase or Decrease
Average mileage operated	10,533.72	10,580.98	— 47.26
RAILWAY OPERATING REVENUES	$650,567,316	$664,851,023	—$14,283,707
Maintenance of way	$85,419,898	$87,929,524	— $2,509,626
Maintenance of equipment	130,231,307	140,878,861	— 10,647,554
Transportation	227,703,832	245,052,205	— 17,348,373
TOTAL OPERATING EXPENSES	$480,171,634	$510,668,662	—$30,497,028
Operating ratio	73.8	76.9	— 3.1
NET REVENUE FROM OPERATIONS	$170,395,682	$154,182,361	16,213,321
Railway tax accruals	37,846,357	35,709,749	2,136,608
Railway operating income	$132,461,323	$118,323,001	$14,138,322
Hire of equipment—Dr.	14,047,210	12,923,190	1,124,020
Joint facility rents—Dr.	1,116,427	1,422,508	— 306,081
NET RAILWAY OPERATING INCOME	$117,297,686	$103,977,303	$13,320,383
Non-operating income	44,535,659	43,236,996	1,298,663
GROSS INCOME	$161,833,345	$147,214,300	$14,619,045
Rent for leased roads	48,585,352	47,029,935	1,555,417
Interest on funded debt	28,800,564	29,893,588	— 1,093,024
TOTAL DEDUCTIONS FROM GROSS INCOME	$79,325,731	$79,054,004	$271,727
NET INCOME	$82,507,613	$68,160,296	$14,347,317
Surplus for year carried to profit and loss	$38,950,928	$28,046,355	$10,904,573

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—*Director elected.*—J. L. Beven, senior vice-president of the Illinois Central at Chicago has been elected a director of this railroad to succeed A. E. Clift, recently elected president of the Central of Georgia.

TEXAS & PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of $34,000,000 of general and refunding mortgage 5 per cent bonds, Series C. Of the total $20,000,000 are to be sold at not less than 96¾, $5,000,000 are to be pledged as collateral for short-term notes, and $9,000,000 are to be held in the treasury.

VIRGINIAN.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $4,237,471, equivalent after allowing for dividend requirements on preferred stock to $8.18 a share. This compares with net income of $5,908,562, or $13.53 a share in 1927. Selected items from the income statement follow:

VIRGINIAN

	1928	1927	Increase or Decrease
Average mileage operated	545.16	545.16	.....
RAILWAY OPERATING REVENUES	18,480,118	22,114,785	—3,634,667
Maintenance of way	1,861,405	2,377,652	— 516,247
Maintenance of equipment	3,809,546	4,309,586	— 500,040
Transportation	3,892,597	4,424,255	— 531,658
TOTAL OPERATING EXPENSES	10,103,840	11,603,491	—1,499,651
Operating ratio	54.67	52.47	2.20
NET REVENUE FROM OPERATIONS	8,376,278	10,511,295	—2,135,017
Railway tax accruals	1,886,000	2,102,954	— 216,954
Railway operating income	6,489,988	8,403,911	—1,913,923
Hire of equipment—net	557,532	611,890	— 54,258
NET RAILWAY OPERATING INCOME	not shown		
GROSS INCOME	8,316,084	10,008,856	—1,692,772
Interest on funded debt	2,767,200	2,767,200	.....
TOTAL DEDUCTIONS FROM GROSS INCOME	4,078,613	4,100,294	— 21,681
NET INCOME	4,237,471	5,908,562	—1,671,091

Average Prices of Stocks and of Bonds

	Apr. 9	Last week	Last year
Average price of 20 representative railway stocks	129.11	128.29	121.94
Average price of 20 representative railway bonds	90.70	90.53	96.73

Officers

Executive

William Wyer, assistant to the president of the Denver & Rio Grande Western at Denver, Colo., has been elected vice-president, assistant secretary and assistant treasurer of the International-Great Northern and the San Antonio, Uvalde & Gulf, with headquarters at New York.

John A. Chambliss has been elected chairman of the board of the Tennessee, Alabama & Georgia, with headquarters at Chattanooga, Tenn. **L. C. Smallwood** has been elected president and **George W. Christians** has been elected vice-president and chief engineer, both with headquarters at Chattanooga.

Charles E. Lytle, who has been appointed assistant to the vice-president of the Duluth, South Shore & Atlantic and the Mineral Range, with headquarters at Marquette, Mich., has been in the service of those railways for 41 years. He was born on March 2, 1859, at Newark, Ohio, and entered railway service in 1873 as a telegraph operator on the Allegheny Valley. Five years later he was promoted to train dispatcher at Brookville, Pa., where he remained until 1882, when he was appointed chief train dispatcher on the Buffalo, Rochester & Pittsburgh at Bradford, Pa. Mr. Lytle entered the service of the Duluth, South Shore & Atlantic as a trainmaster on April 19, 1888, then for three months in 1892 he served in the same capacity on the Lake Erie & Western (now part of the New York, Chicago & St. Louis) at Muncie, Ind. He then returned to the South Shore as superintendent at Marquette, being promoted to general superintendent of that railway and the Mineral Range in July, 1899, with headquarters at Marquette. In 1925 Mr. Lytle was promoted to general manager of the two railways, his appointment as assistant to the vice-president becoming effective on April 1.

Chester C. Kratky, who has been promoted to assistant to the vice-president in charge of operation of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been connected with that railway for 15 years. He was born on March 11, 1900, at St. Louis and after attending grade school, high school and the Benton College of Law in that city he entered railway service on March 16, 1914, as an office boy in the law department of the Frisco. Two years later he became a file clerk in the development department and in 1917 he was transferred to the office of the vice-president and general manager as a stenographer. From 1918 to 1926 Mr. Kratky successively filled the positions of assistant chief clerk in the development department, stenographer in the

office of vice-president and general manager and secretary to the president. On September 1, 1926, he was advanced to

Chester C. Kratky

chief clerk to the president and vice-president in charge of operation, a position he held until his promotion to assistant to the vice-president on April 1.

Financial, Legal and Accounting

Ashby M. Warren has been appointed district attorney for Kentucky for the Louisville & Nashville, with headquarters at Louisville, Ky.

A. J. Van Groll has been appointed treasurer and auditor of the Manistee & Northeastern, with headquarters at Manistee, Mich.

The office of **T. W. Burtness,** secretary of the Chicago, Milwaukee, St. Paul & Pacific, has been removed from Milwaukee, Wis., to Chicago.

M. F. Stokes, assistant secretary of the Chicago & Western Indiana and the Belt Railway of Chicago, has been elected secretary, with headquarters as before at Chicago, succeeding **R. L. Porter,** secretary, who has been elected assistant secretary.

Z. Carteer Patten has been elected secretary, **J. F. Poalzow** has been elected treasurer and assistant secretary and **Estes Kefauver** has been appointed assistant general counsel of the Tennessee, Alabama & Georgia, all with headquarters at Chattanooga, Tenn. **D. E. Hedges,** auditor and treasurer, has been appointed comptroller, with headquarters as before at Chattanooga.

A. E. Plant, comptroller of the Atlantic region of the Canadian National, with headquarters at Montreal, Que., has been appointed European comptroller, with jurisdiction over all accounting in Great Britain and on the Continent, with headquarters at London, England. **G. N. Palmer,** auditor of disbursements of the Atlantic region, has been appointed comptroller, succeeding Mr. Plant. He will in turn be succeeded by **B. W. Cummings,** assistant to the comptroller. **T. H. Walsh** will succeed Mr. Cummings as assistant comptroller of the Atlantic region, with headquarters at Moncton, N. B.

Operating

Following the return of **W. R. Petty,** superintendent of the St. Louis terminal division of the Missouri Pacific from a leave of absence, **A. R. Miller,** who served as acting superintendent of that division, has resumed his duties as freight trainmaster on the St. Louis division. **W. L. Yowell** has been appointed freight trainmaster on the St. Louis Terminal division, with headquarters at St. Louis, Mo.

Traffic

J. L. Carlton has been appointed general agent of the New York Central at Chicago.

W. O. Dodge has been appointed assistant general eastern agent for the St. Louis-San Francisco at New York.

P. A. Spiegelberg and **W. G. Wescoat** have been appointed assistant general freight agents of the Wabash, with headquarters at St. Louis, Mo.

Fred N. Hait has been appointed general agent for the Chicago, Springfield & St. Louis and the Jacksonville & Havana at Cleveland, Ohio.

W. H. Larsen, commercial agent on the Kansas City Southern at Fort Worth, Tex., has been promoted to general agent at El Paso, Tex.

T. R. Patton, general agent in the passenger department of the Erie at Cleveland, Ohio, has been promoted to assistant general passenger agent, with headquarters at the same point.

W. F. Smith, commercial agent for the Alabama, Tennessee & Northern at Birmingham, Ala., has been promoted to general agent at the same point. **C. F. Mowbray** has been appointed general agent at Memphis, Tenn.

A. Capdevielle has been appointed general agent of the Southern Pacific lines in Texas and Louisiana, with headquarters at New Orleans, La., succeeding **John McGraw,** deceased.

W. A. Sutton has been appointed manager of mail, baggage and express traffic of the Pere Marquette, with headquarters at Detroit, Mich., succeeding **L. E. Mueller,** deceased.

George S. Wood, J. T. Little and **W. H. Billings,** commercial agents for the New York, Ontario & Western at Detroit, Mich., Cleveland, Ohio, and St. Louis, Mo., respectively, have been promoted to general agents at the same points.

J. G. Willock has been appointed general agent of the freight department of the New York Central Lines at New Orleans, La., succeeding **S. D. Powers,** who has been transferred to Tulsa, Okla.

A. K. Anderson, general agent for the Pittsburgh & West Virginia at Philadelphia, Pa., has been transferred to Kansas City, Mo., a newly created agency. **J. L. Patterson** has been appointed general agent at Philadelphia to replace Mr. Anderson.

George Ernest Orton, assistant publicity agent of the Great Western (Great Britain), with headquarters in London England, has been appointed general agent for the United States and Canada, with headquarters at 505 Fifth avenue, New York, effective May 1.

J. B. Lamson, agricultural development agent of the Chicago, Burlington & Quincy, has been appointed manager of commercial development, with headquarters as before at Chicago. **H. L. Ford,** agricultural agent of the Burlington, Lines West, and the Colorado & Southern, with headquarters at Denver, Colo., has been promoted to agricultural development agent of the Burlington, succeeding Mr. Lamson. **F. L. Taylor,** assistant agricultural agent of the Colorado & Southern, has been promoted to agricultural agent, replacing Mr. Ford.

Alfred J. Ball, who has been appointed to the newly created position of foreign freight traffic manager of the Pennsylvania, with headquarters at Philadelphia, Pa., was born in that city in 1882. He attended the Hamilton school, Brown Preparatory school and later studied business science at Drexel Institute. He entered railroad service in 1900 as stenographer in the office of the manager of the Empire Line of the Pennsylvania at Philadelphia. After serving in various capacities in the traffic department he

Alfred J. Ball

was promoted to the position of foreign freight agent of the Pennsylvania, Lines East of Pittsburgh and Erie in July, 1916. During the period of federal control Mr. Ball served as traffic control manager for the United States Railroad Administration, in addition to his duties on the Pennsylvania. Upon the termin-

ation of federal control he continued his duties as foreign freight agent of the Pennsylvania, and in August, 1925, he was appointed general freight agent, which position he held at the time of his recent promotion.

W. W. Hale, general agent of the Southern Pacific at Detroit, Mich., has been promoted to assistant to the freight traffic manager, with headquarters at San Francisco, Cal. **L. H. Trimble**, general agent, perishable freight traffic, at San Francisco, has been transferred to Detroit to succeed Mr. Hale. Mr. Hale has been connected with the Southern Pacific for about 27 years, entering its service in 1901 as a clerk in the general passenger office at San Francisco. In 1904 he was transferred to the office of

W. W. Hale

the superintendent of transportation and in 1917 he was promoted to eastern car service agent, with headquarters at Chicago. During federal control of the railroads, from 1918 to 1920, Mr. Hale occupied various positions with the Railroad Administration, then being appointed general agent of the Southern Pacific at Detroit on February 1 of the latter year. His promotion to assistant to the freight traffic manager at San Francisco became effective on April 1.

E. S. Neilson, who has been appointed freight traffic manager of the Pennsylvania, with headquarters at Philadelphia, Pa., was born on July 22, 1887, at Warrenton, Va. He was educated at the Episcopal Academy of Philadelphia and entered railway service in April, 1904, as a junior clerk on the Pennsylvania. The following year he was promoted to stenographer in the overcharge department of the general freight agent's office and in November, 1906, he was transferred to the office of the division freight agent at Philadelphia, where he served consecutively as tariff clerk, local rate clerk, chief rate clerk and tariff inspector. He was promoted to freight solicitor at New Haven, Conn., in 1909, and two years later he was transferred in the same capacity to Easton, Pa., later serving in that position at Rochester, N. Y., Reading, Pa., Harrisburg, Pa., and Pittsburgh, Pa. On March 1, 1916, Mr. Neilson was appointed division freight agent at Altoona, Pa., and in December of the same year he was transferred to Erie, Pa., in the same capacity. In 1919, he served with the United States Railroad Administration in the office of the regional director at Philadelphia, returning to the Pennsylvania as division freight and passenger

E. S. Neilson

agent in December, 1919. Mr. Neilson was appointed foreign freight agent, with headquarters at Philadelphia, in August, 1925, and in November of the same year he was promoted to the position of general foreign freight agent, which position he held at the time of his recent appointment as freight traffic manager.

Engineering, Maintenance of Way and Signaling

George P. Smith, consulting engineer of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, retired from active railroad service under the pension rules of the company on April 1.

L. A. Henry, sanitary inspector on the Missouri Pacific at Little Rock, Ark., has been promoted to landscape engineer of the Missouri Pacific Lines, with headquarters at St. Louis, Mo., in charge of landscape work and sanitation.

Edward W. Shea has been appointed signal supervisor of the Providence division of the New York, New Haven & Hartford, with headquarters at Providence, R. I. succeeding **S. H. Wright**, deceased.

S. J. Munroe, division engineer of the Kamloops division of the Canadian National, with headquarters at Kamloops, B. C., has been transferred to the Vancouver Island division, with headquarters at Victoria, B. C., succeeding **H. L. Johnston**, acting district engineer, who retired on April 1. **M. M. Churchill**, roadmaster of the Clearwater subdivision of the Kamloops division at Kamloops Junction, B. C., has been appointed acting division engineer of the Kamloops division, temporarily succeeding Mr. Munroe.

Purchases and Stores

F. C. Riley, traveling storekeeper and maintenance inspector on the Chicago & Alton, has been promoted to assistant general storekeeper, with headquarters at Bloomington, Ill., succeeding **E. L. Murphy**, who has resigned to accept service with another company.

Mechanical

Daniel W. Saunders, general foreman in the locomotive department of the Illinois Central at Twenty-seventh street, Chicago, has been promoted to master mechanic of the Springfield division, with headquarters at Clinton, Ill.

Obituary

Lewis E. Carr, counsel for the Delaware & Hudson for many years, died on April 1 at his home in Albany, N. Y., after a long illness.

W. H. Fish, general agent of live poultry traffic of the New York Central at Chicago, died in that city on April 5.

John W. Stevens, division engineer of the New York Central, with headquarters at Weehawken, N. J., died at his home in Jersey City, N. J., on April 8.

Joseph B. Stewart, general agent in the freight department of the Delaware & Hudson at St. Louis, Mo., since 1916, died at the St. Louis Mullanphy Hospital in that city on April 8 following an operation on April 4.

John J. Connolly, retired terminal trainmaster of the St. Louis-San Francisco at Birmingham, Ala., died at his home in that city on February 17. At the time of his retirement in August, 1928, Mr. Connolly had been in the service of the Frisco for 43 years.

Julius S. Walsh, Jr., former assistant secretary of the Terminal Railroad Association of St. Louis (Mo.), died at Hot Springs, Va., on April 5 at the age of 52 years. Mr. Walsh served as assistant secretary of the Terminal Association from 1904 to 1916, after starting his railway career as a yard clerk with that company. In 1920 he was appointed industrial agent of the Wabash, with headquarters at St. Louis, then in 1923 being appointed general manager of the Okmulgee Northern, with headquarters at Okmulgee, Okla. Mr. Walsh also served the latter railroad as vice-president until 1925.

Julien F. Gracey, general agent in the freight department of the Louisville & Nashville at Clarksville, Tenn., died of apoplexy at his home in that city on April 6. He had been in the service of the L. & N. for nearly 40 years, having previously been division freight agent t Memphis, Tenn., and superintendent of the Owensboro & Nashville division at Russellville, Ky.